

Vanderbilt University Undergraduate Catalog



Calendar 2000/2001

FALL SEMESTER 2000

Deadline to pay fall charges / Tuesday 22 August
Orientation begins for new students / Saturday 26 August
Registration ends / Tuesday 29 August
Classes begin / Wednesday 30 August
Change period for fall / Thursday 31 August–Wednesday 6 September
Homecoming / Saturday 21 October
Course request period for spring / Monday 6 November–4:00 p.m. Friday 17 November
(Dates for spring registration will be published in the spring *Schedule of Courses*.)
Thanksgiving holidays / Saturday 18 November–Sunday 26 November
Classes end / Tuesday 12 December
Reading days and examinations / Wednesday 13 December–Thursday 21 December
Fall semester ends / Thursday 21 December

SPRING SEMESTER 2001

Deadline to pay spring charges / Wednesday 3 January
Orientation for new students / Sunday 7 January
Classes begin / Wednesday 10 January
Change period for spring / Thursday 11 January–Wednesday 17 January
Spring holidays / Saturday 3 March–Sunday 11 March
Founder's Day / Friday 16 March
Parents Weekend / Friday 30 March–Sunday 1 April
Course request period for fall 2001 (continuing students) / begins Monday 9 April
Classes end / Tuesday 24 April
Reading days and examinations / Wednesday 25 April–Thursday 3 May
Deadline to register for fall to avoid the late registration fee / Friday 4 May
Commencement / Friday 11 May

MAY SESSION 2001

Registration; classes begin / Monday 7 May
Classes end; examinations / Friday 1 June

SUMMER SESSION 2001

Registration for most schools / Monday 4 June
Classes begin in Arts and Science, Blair, and Engineering / Tuesday 5 June
Module I begins in Peabody / Monday 11 June
Examinations for first-half courses / Friday 6 July
Module II begins in Peabody; supplementary registration for second-half courses in other schools / Monday 9 July
Second-half courses begin / Tuesday 10 July
Examinations for second-half and full-term summer courses / Thursday 9 August–Friday 10 August



Undergraduate Catalog

College of Arts and Science
Blair School of Music
School of Engineering
Peabody College

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Vanderbilt
University
2000/2001

Containing general information
and courses of study
for the 2000/2001 session
corrected to 15 June 2000
Nashville

The University reserves the right, through its established procedures, to modify the requirements for admission and graduation and to change other rules, regulations, and provisions, including those stated in this bulletin and other publications, and to refuse admission to any student, or to require the withdrawal of a student if it is determined to be in the interest of the student or the University. All students, full- or part-time, who are enrolled in Vanderbilt courses are subject to the same policies.

Policies concerning non-curricular matters and concerning withdrawal for medical or emotional reasons can be found in the *Student Handbook*.

NONDISCRIMINATION STATEMENT

In compliance with federal law, including the provisions of Title IX of the Education Amendments of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990, Vanderbilt University does not discriminate on the basis of race, sex, religion, color, national or ethnic origin, age, disability, or military service in its administration of educational policies, programs, or activities; its admissions policies; scholarship and loan programs; athletic or other University-administered programs; or employment. In addition, the University does not discriminate on the basis of sexual orientation consistent with University non-discrimination policy. Inquiries or complaints should be directed to the Opportunity Development Officer, Baker Building, Box 1809 Station B, Nashville, Tennessee 37235. Telephone (615) 322-4705 (V/TDD); fax (615) 343-4969.

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The University

COMMODORE Cornelius Vanderbilt, who gave a million dollars to build and endow Vanderbilt University in 1873, expressed the wish that it “contribute . . . to strengthening the ties which should exist between all geographical sections of our common country.”

A little more than a hundred years later, the Vanderbilt Board of Trust adopted the following mission statement: “We reaffirm our belief in the unique and special contributions that Vanderbilt can make toward meeting the nation’s requirements for scholarly teaching, training, investigation, and service, and we reaffirm our conviction that to fulfill its inherited responsibilities, Vanderbilt must relentlessly pursue a lasting future and seek highest quality in its educational undertakings.”

Today as Vanderbilt pursues its mission, the University more than fulfills the Commodore’s hope. It is one of a few independent universities with both a quality undergraduate program and a full range of graduate and professional programs. It has a strong faculty of more than 1,800 full-time members and a diverse student body of about 10,000. Students from many regions, backgrounds, and disciplines come together for multidisciplinary study and research. To that end, the University is the fortunate recipient of continued support from the Vanderbilt family and other private citizens.

The 316-acre campus is about one and one-half miles from the downtown business district of the city, combining the advantages of an urban location with a peaceful, park-like setting of broad lawns, shaded paths, and quiet plazas.

Off-campus facilities include the Arthur J. Dyer Observatory, situated on a 1,131-foot hill six miles south.

The schools of the University offer the following degrees:

College of Arts and Science. Bachelor of Arts, Bachelor of Science.

Graduate School. Master of Arts, Master of Arts in Teaching, Master of Liberal Arts and Science, Master of Science, Doctor of Philosophy.

Blair School of Music. Bachelor of Music.

Divinity School. Master of Divinity, Master of Theological Studies, Doctor of Ministry.

School of Engineering. Bachelor of Engineering, Bachelor of Science, Master of Engineering.

School of Law. Doctor of Jurisprudence.

School of Medicine. Doctor of Medicine, Master of Public Health.

School of Nursing. Master of Science in Nursing.

Owen Graduate School of Management. Master of Business Administration.

Peabody College. Bachelor of Science, Master of Education, Master of Public Policy, Doctor of Education.

No honorary degrees are conferred.

Accreditation

Vanderbilt University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Georgia, Telephone number 404-679-4501) to award Bachelor's, Master's, Specialist's, and Doctor's degrees. Vanderbilt is a member of the Association of American Universities.

The Libraries

The Jean and Alexander Heard Library

"We often tend to think of a library simply as a collection of books. What we sometimes forget is that a library is a place of interaction, where the minds of students and faculty collide with other minds removed in time and place." *Chancellor Emeritus Alexander Heard.*

The Jean and Alexander Heard Library is one of the important research libraries in the Southeast, with more than 2.5 million volumes in nine libraries. Most materials are shelved in open stacks and are available to students and faculty through Acorn, the library's integrated, automated system. Acorn also provides access to a growing number of full-text journals, as well as indexes and other research resources, and is accessible via the campus network and from workstations in each library.

The divisions of the Heard Library include:

Central Library (contains resources in the social sciences and humanities)

Divinity Library

Education Library

Alyne Queener Massey Law Library

Walker Management Library

Annette and Irwin Eskind Biomedical Library

Anne Potter Wilson Music Library

Sarah Shannon Stevenson Science and Engineering Library

Special Collections and University Archives

For more information about library collections, facilities, and services, see the library's home page, www.library.vanderbilt.edu.

Computing Resources

Academic Computing and Information Services (ACIS), located in the Hill Center Expansion, provides computing services and resources to Vanderbilt students, faculty, and staff.

ACIS maintains and supports VUnet, the campus-wide data network that provides access to the Internet, as well as VUnet ID, which enables Vanderbilt users to identify themselves to certain services on VUnet. Services currently authenticated by VUnet ID include OASIS, the University's course registration system; Prometheus on-line courseware; VUmail, the University's electronic message system; VUspace, the University's network file system; and VUdirectory, the University's on-line directory service. For more information on ACIS services, visit the Web page at www.vanderbilt.edu/ acis.

All campus residences are included in ResNet, which provides services for direct connection to VUnet. More information about ResNet can be found at www.vanderbilt.edu/resnet.

The ACIS Help Desk is an information center designed to help students, faculty, and staff find answers to questions about connecting to VUnet and using VUnet services. Help Desk locations, hours, contacts, and other information can be found at www.vanderbilt.edu/helpdesk.

For more information about computing at Vanderbilt, visit the "Computing at Vanderbilt" Web page, www.vanderbilt.edu/compute.

Commencement

The University holds its annual Commencement ceremony following the spring semester. Degree candidates must have completed successfully all curriculum requirements and have passed all prescribed examinations by the published deadlines to be allowed to participate in the ceremony. A student completing degree requirements in the summer or fall semester will be invited to participate in Commencement the following May; however, the semester in which the degree was actually earned will be the one recorded on the diploma and the student's permanent record. Students unable to participate in the graduation ceremony will receive their diplomas by mail.

Special Programs for Undergraduates

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Study Abroad Programs

The College of Arts and Science offers study programs for all Vanderbilt students in Argentina, Australia, Brazil, Chile, the People's Republic of China, the Republic of China on Taiwan, the Dominican Republic, England, France, Germany, Ghana, Israel, Italy, Japan, Russia, New Zealand, and Spain to provide undergraduates immediate contact with cultures different from their own and to aid in the mastery of foreign languages. Students interested in applying for overseas study should consult their advisers to determine whether all degree requirements can be completed on schedule.

Brochures on all programs are available in the Study Abroad Office in 008 Furman Hall. Study Abroad also maintains a Web site, www.vanderbilt.edu/Ans/Studyabroad.htm. The overseas programs are described in more detail in the chapter on Additional Programs in the Arts and Science section of this catalog.

In addition to being eligible for the Study Abroad programs offered by the College of Arts and Science, qualified students of Peabody College have the opportunity to apply to spend their junior year abroad at Homerton College. Refer to the Special Programs chapter of the Peabody section of this catalog, or contact the Office of Undergraduate Student Affairs at Peabody.

Joint Programs

Vanderbilt undergraduates in education, engineering, and music take their background liberal arts and science courses in the College of Arts and Science—and may take other elective courses in these areas as individual degree programs will allow. In like manner, students in the College of Arts and Science may take approved courses in the other schools for regular or professional credit toward the liberal arts degree (see Limitation on Professional Hours in the Arts and Science section of this catalog. A list is available in the College of Arts and Science Registrar's Office. Students may earn a second major or minor outside of their school, as well.

Several joint programs, combining undergraduate study with work toward a master's degree, often make possible saving a year in the time required to complete both degrees. Details of the various joint programs will be found in the appropriate school sections of this catalog.

Preparation for Careers in the Health Professions

Study programs leading to careers in medicine, dentistry, veterinary science, public health, and many related areas are under the general supervision of the Advisory Committee on Health Professions. Associate Professor Thomas N. Oeltmann is health professions adviser for students in Arts and Science and Blair. Professors Thomas R. Harris and Sharon L. Shields are advisers to engineering and Peabody students, respectively.

Medicine

Students interested in premedical studies should plan their undergraduate programs in consultation with Professor Oeltmann or the appropriate adviser for their school. There is no formal premedical program of courses at Vanderbilt. Each student should plan a program to meet individual requirements. Premedical studies should include whatever courses may be necessary to meet medical school admission requirements and to satisfy the requirements of the student's undergraduate degree program.

See the Vanderbilt Medical Center Catalog for the official statement on minimum requirements for admission. *Admission to the Vanderbilt University School of Medicine is competitive. There is no course of study that will ensure admission.*

Students are urged to consult the directory *Medical School Admission Requirements, USA and Canada*, published by the Association of American Medical Colleges, as a guide to planning their undergraduate programs. Additional information on preparation for medical study can be found in the College of Arts and Science section of this book.

Nursing

Students interested in nursing may earn a Master of Science in Nursing (M.S.N.) degree in five years. Interested students apply for admission to either the College of Arts and Science or Peabody College and indicate on their applications that pre-nursing is their intended program of studies. In addition to their faculty advisers in the College of Arts and Science or Peabody, pre-nursing students will be assigned faculty advisers in the School of Nursing to assist them in planning their program of studies.

Pre-nursing students in the College of Arts and Science may complete 78 hours of prerequisite courses and apply for admission to the School of Nursing for either their junior or their senior year. Upon admission to the School of Nursing, the student is required to complete six semesters (two calendar years) of full-time study to earn the M.S.N. Additional information may be found in the *Medical Center Catalog*.

Pre-nursing students at Peabody College may either (a) complete a major in Child Development and earn a B.S. through a senior-in-absentia program or (b) complete a major in Human and Organizational Development and earn a B.S. through a senior-in-absentia program or (c) complete 78 hours of prerequisite courses and apply for admission to the School of Nursing for either their junior or their senior year. Upon admission to the School of Nurs-

ing, the student is required to complete six semesters (two calendar years) of full-time study to earn the M.S.N. Additional information may be found in the Peabody College section of this catalog.

Admission to the Graduate Nursing Program. Prior to admission to the School of Nursing, applicants must have completed prerequisite courses, including the following:

Six hours of English composition, literature, or other Vanderbilt courses designated with a "W."

Six hours of humanities courses concerned with human thought, including literature, classics, theatre, fine arts, history, music, philosophy, and religion. Technical or skill courses, such as music performance or studio art, are not acceptable humanities courses.

A required introductory course in statistics that includes descriptive and inferential statistical techniques; Mathematics 127a–127b, Mathematics 180, Mathematics 218, or Psychology 2101 will fulfill this requirement.

Nine hours of social science courses in psychology, sociology, anthropology, political science, or economics.

Eleven hours of natural science courses. Courses in human anatomy and physiology (Nursing 210a and 210b) and microbiology (Nursing 150) are required. Chemistry 101a–101b or 102a–102b and Biological Sciences 110a–110b are strongly recommended for admission but not required.

Three hours of lifespan development are required. Human and Organizational Development 1000, Applied Human Development; or Psychology 1630, Developmental Psychology will fulfill the lifespan development requirement.

Two hours of nutrition are required. Nursing 231, Introduction to Nutritional Health, fulfills the requirement for nutrition.

The remaining hours of prerequisites must consist of courses with grades of C or above; physical education and Pass/Fail or P/D/F courses may be included in the prerequisites.

Admission to the School of Nursing is competitive. Consult the *Medical Center Catalog* for specific requirements and admission procedures. Students are encouraged to write or call the School of Nursing's Office of Admissions, 226 Godchaux Hall, Nashville, TN 37240, (615) 322-3800, or see the Web site, www.mc.vanderbilt.edu/nursing, for further explanation of pre-nursing and graduate nursing programs.

Preparation for Other Professional Careers

Architecture, Law, Journalism and Science Writing

Undergraduate students expecting to pursue architecture, law, or journalism at the graduate level may earn any major at Vanderbilt, but should be

aware of graduate field requirements. See the chapter on Special Programs in the College of Arts and Sciences section of this catalog.

Teacher Licensure Programs

Vanderbilt offers programs through Peabody College leading to licensure for teaching. Students seeking teacher licensure should refer to the Peabody College section of this catalog. Students seeking licensure in music should see the Blair section of this catalog.

Undergraduate students in the College of Arts and Science, Blair School of Music, the School of Engineering, or Peabody College who are seeking licensure in early childhood, elementary, or secondary education must complete a major outside of teacher education and a Peabody College education major.

Officer Education Programs

Army Reserve Officers' Training Corps

The Army Reserve Officers' Training Corps (ROTC) unit at Vanderbilt conducts the Army Officer Education Program. Army ROTC provides college-educated officers for the Army, Army Reserve, and Army National Guard. As the Army's largest commissioning source, it fulfills a vital role in providing mature young men and women for leadership and management positions in an increasingly technical Army. Admission is open to both men and women who meet mental, moral, and physical qualifications.

Training goes beyond the typical college classroom and is designed to build individual confidence and self-discipline, instill values and ethics, and develop leadership skills. The course load consists of one course per semester with one class and laboratory each week.

Scholarship students receive \$20,000 in tuition assistance each year, an annual \$450 book allowance, a monthly \$200 tax-free stipend, and all uniforms. Vanderbilt University also provides Vanderbilt ROTC scholarship students an additional \$3,000 tuition grant each year. Students who are not on scholarship receive the monthly stipend during their junior and senior years.

Scholarships. Students can earn merit scholarships in several ways.

High school seniors and graduates compete for four-year and advance designation three-year scholarships that are determined by local competition among Vanderbilt applicants. Although determined locally, the application process is centrally managed, and this process closes on November 15th of the year prior to admission.

College sophomores not enrolled in military science may enter the program by attending six weeks of summer training at Fort Knox, Kentucky, after their sophomore year. Although under no obligation for attending, these students are then eligible to compete at the national level for two-year scholarships.

Enlisted members of the U.S. Army are eligible for Green-to-Gold scholar-

ships that are determined by national competition or by the commanding generals of Army divisions and corps.

Enlisted members of the Army Reserve or Army National Guard or outstanding students who are interested in joining the Army Reserve or Army National Guard may be eligible for two-year scholarships. They must have successfully completed two years of college to apply.

Summer training. The five-week leadership exercise at Fort Lewis, Washington, is a commissioning requirement. This is normally done between the junior and senior years. Travel, room, and board are provided free, and cadets are paid approximately \$700. Other training opportunities exist for qualified applicants who volunteer.

Commissioning and career opportunities. A commission in the U.S. Army is a distinctive honor earned through hard work, demonstrated commitment, and a desire to serve the nation. Post-graduate military education, usually starting within six months of graduation and commissioning and continuing through the officer's service career, begins with officer basic courses that qualify new lieutenants in their specialties. Afterwards they are usually assigned as platoon leaders, typically responsible for every aspect of training, supervising, and caring for sixteen to thirty soldiers and millions of dollars worth of equipment. Education delays are available for critical specialties requiring post-graduate civilian education such as law and medical degrees.

Service obligations. After the freshman year, scholarship students incur a service obligation of four years active duty and four years in the Army National Guard or the Army Reserve. There are also opportunities to serve all eight years in the Guard or Reserves.

Course credit. During the four-year program, Army ROTC students complete eight courses of Military Science. Academic credit varies by school.

College of Arts and Science. Army ROTC students may count MS 113 and MS 151 as professional hours. Grading is on a P/F basis.

School of Engineering. MS 113, 151, and 152 may be taken as open electives.

Peabody College and Blair School of Music. MS 113, 151, and 152 are acceptable as electives.

Tuition. Tuition is waived for any military science course that is not applied toward the degree.

Information. Inquiries regarding enrollment in the Army ROTC program should be made to the Army ROTC Admissions Officer at (615) 322-8550 or (800) 288-7682 (ROTC).

Military Science Department

COMMANDING OFFICER Sam D. Doyle

MILITARY INSTRUCTORS Bill Davidson, Audrey Hudgins, Ryan Jones, Gary Hopkins

Military Science Courses

FRESHMAN YEAR

MS 111. Introduction to Military Science

MS 113. The Leadership Process

SOPHOMORE YEAR

MS 151. American Military History: Principles of War

MS 152. Military Ethics and Professionalism

JUNIOR YEAR

MS 211. Theory and Dynamics of Tactical Operations

MS 212. Military Training Management

SENIOR YEAR

MS 251. Senior Seminar

MS 252. Senior Seminar

Naval Officer Education

The Naval Reserve Officer Training Corps (NROTC) unit at Vanderbilt conducts the Naval Officer Education program.

Challenging academic courses and experience-building events prepare a select group of highly accomplished students for the opportunity to serve their country and receive an education. Naval Officer Education prepares students for active duty service as officers in the U.S. Navy and Marine Corps. Its primary focus is to develop the ablest leaders possible by building upon the academic strength of Vanderbilt and providing essential military and leadership education.

Students participate in the NROTC unit in either the scholarship program, the College Program, or the naval science program. Scholarship students take the prescribed naval science course each semester, participate weekly in naval science lab, and engage in a four-week summer training program after each academic year. The College Program is identical to the scholarship program except for tuition financial benefit and that students only participate in summer training upon completion of their junior academic year. Any Vanderbilt student may take any or all of the naval science courses without participating in naval science lab or summer training.

Scholarship students receive tuition assistance, fees, textbooks, uniforms, and a monthly stipend of \$200. Vanderbilt also provides scholarship students with a \$3,000 per year stipend toward room and board. College Program students are provided with uniforms, textbooks for naval science courses, and, upon commencement of their junior year, a monthly stipend of \$200.

Scholarships. Students can earn scholarships in several ways. Four-year scholarships are determined by national competition among high school seniors and graduates. Based on the national ranking, students may be awarded a scholarship that covers full tuition. The application process begins as early as the spring semester of the student's junior year, but no later than 1 December of the year prior to admission. College program students can be nominated for three- and two-year scholarships by the NROTC unit. These nominations are based on the students' academic and military performance at the college level. Sophomores not enrolled in the College Program are eligible to apply for the two-year NROTC Scholarship program. This is a national competition and application is made through the NROTC unit. Those selected will attend a six-week naval orientation program during the summer prior to joining the NROTC unit in their junior year.

Service obligation. After their freshman year, scholarship students incur a service obligation of four years of active duty and four years in the inactive reserve. College program students incur a three-year active duty and five-year inactive reserve commitment upon commencing their junior year.

Summer training. Summer training of about four weeks is conducted aboard naval vessels and naval shore stations after each of the first three academic years. Scholarship students are normally required to participate each year. All scholarship and college program midshipmen are required to participate in summer training prior to their final academic year.

Course credit. During the four-year program, NROTC students are required to complete a maximum of eight courses (24 hours) of naval science. Academic credit awarded varies by school and is outlined below.

College of Arts and Science. NS 231 may be taken for academic credit as professional hours. NS 241 may be taken for academic credit as professional hours by NROTC students; Business Administration 247 (Sociology 247) or Business Administration 248 may be taken in lieu of NS 241. History 131 may be taken for credit as part of the NROTC requirement. All other naval science hours are earned in excess of the 120 hours required for the B.A. or B.S. degree.

School of Engineering. History 131 may be counted as a social science elective. Courses NS 121, 231 and 241 may be counted as open electives. Management of Technology 227 or 246 (technical electives) or Business Administration/Sociology 247 (social science elective) or Business Administration 248 may be substituted for NS 241. Mechanical Engineering 220a with a reading supplement may be substituted for NS 121. Use of electives varies by major.

Blair School of Music and Peabody College. Courses NS 231 and 241 and History 131 are acceptable as electives. Business Administration/Sociology 247, Business Administration 248, or Human Resources 1100, 1200, 1300, or 2700 may be taken in lieu of NS 241.

Required Courses for Navy Scholarship. The following courses are required for Navy option students on scholarship:

Calculus (6 credits minimum): Mathematics 150a–b, or 155a–b completed by the end of the sophomore year.

Physics (8 credits): 116a–b, 117a–b, or 121a–b completed by the end of the junior year.

English (6 credits): Two semesters of any English course or courses consisting of a writing component (e.g., 115W).

Political Science (3 credits): 100 or above.

Computer Science (3 credits): 100 or above.

Admission to the program is open to both men and women. Physical qualification to Naval Service standards is required.

Information. Inquiries regarding enrollment in the Naval ROTC program should be made to Naval ROTC unit recruiting officer at (615) 322-3560/2671 or (800) 288-0118.

Naval Science

COMMANDING OFFICER Scott T. Johnson
EXECUTIVE OFFICER David C. Smith
MARINE INSTRUCTOR Charles B. Cox
NAVAL INSTRUCTORS Paul R. Algoso, Craig K. Engler, Jeffrey R. Hanke,
Scott T. Johnson, David C. Smith

Naval Science Courses

FRESHMAN YEAR

NS 100. Naval Orientation

History 131. Sea Power in History

SOPHOMORE YEAR

NS 241. Organization and Management

NS 121. Naval Engineering Systems

JUNIOR YEAR

NS 231. Navigation

NS 232. Naval Operations

SENIOR YEAR

NS 130. Naval Weapons Systems

NS 242. Leadership Seminar

The Marine option courses listed below are taught in the fall, rotating on a yearly basis. They are taken in the junior and senior year in lieu of those prescribed above.

NS 231m. Evolution of Warfare

NS 241m. Amphibious Warfare

Air Force Officer Education

Vanderbilt University students may take and receive some credit for Air Force ROTC through the program at Tennessee State University. This program provides precommission training for college men and women who desire to serve as commissioned officers in the United States Air Force. When combined with the academic disciplines offered at the college level, the program provides the student a broad-based knowledge of management, leadership, and technical skills required for commission and subsequent active duty service in the Air Force.

Graduates are commissioned as Second Lieutenants and called to active duty within sixty days of graduation. High school seniors and college freshmen and sophomores are eligible to compete for scholarships. Technical and medical majors are highly supported with scholarships. Technical majors with a 2.65 GPA and medical majors with a 3.5 GPA may receive tuition assistance, books, and fees and a monthly \$200 stipend. Upon admission to medical school, medical majors qualify for scholarships. Full time students enrolled in the Professional Officer Corps that maintain a 2.35 term GPA are eligible for a \$3,480 annual incentive scholarship. Provisions are available for educational delays for graduates who desire to pursue advanced degrees prior to entry on active duty.

Further information on the AFROTC program may be obtained from the AFROTC Admissions Officer, Tennessee State University, at (615) 963-5931/5980. Also check our Web site at *www.tnstate.edu/rotc*.

Vanderbilt Institute for Public Policy Studies (VIPPS)

In 2000/2001, VIPPS will be host to about forty projects, in policy areas as diverse as the problems of at-risk families, the design of environmental management strategies, and the evaluation of alternatives for delivering mental health services to children. The total amount of direct research funding involved, flowing from about three dozen government, foundation, and corporate funding agencies will be over \$4 million. Alongside research associates and faculty fellows, two dozen graduate research assistants will be working on these projects. See our Web site at *www.vanderbilt.edu/VIPPS* for more information about the institute and its individual centers.

Life at Vanderbilt

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Orientation

Vanderbilt conducts five undergraduate orientation programs. (1) The Summer Academic Orientation Program (SAOP), although not mandatory, is attended by more than two-thirds of the entering students and their families. During SAOP, students meet with faculty advisers, plan their fall schedules, and preregister for classes. (2) Squirrel Camp occurs during the three days prior to fall semester opening day. A program with limited enrollment, Squirrel Camp gives students the opportunity to work in small peer clusters with an upperclass student and a faculty member to develop leadership skills, connections, and interdependence. (3) New student orientation is required for all new freshmen and transfer students (in fall or spring semesters). Activities cover a wide range of social and academic events to ensure a smooth transition into university life. (4) Fall Festival occurs during the first full weekend of each fall semester. New students make connections with upperclass students, peers, faculty, and staff throughout this weekend of social and academic hands-on activities. (5) New Student Colloquium is a series of educational programs and activities designed to help students gain an understanding and appreciation of the opportunities for learning and personal growth on campus. Some programs are mandatory. Colloquium plans and expectations for participation are provided to students early in the fall semester.

Vanderbilt is proud of the way new community members are welcomed to campus, but constantly aims to improve. Comments or suggestions about all orientation programs are encouraged and appreciated.

The Honor System

The Honor System is a time-honored tradition that began with the first classes at Vanderbilt in 1875. Students established the system and continue to manage it today. It rests on the presumption that all work submitted as part of course requirements is produced by the student, without help from any other source unless acknowledgement is given in a manner prescribed by the instructor. Cheating, plagiarizing, or otherwise falsifying results of study are specifically prohibited. The system applies not only to examinations but also to written work and computer programs submitted to instructors. Detailed descriptions of Honor System violations and Honor Council procedures are published in the *Student Handbook*, available on the Web, www.vanderbilt.edu/.

Responsibility for the preservation of the system falls on the individual student who, by registration, acknowledges the authority of the Honor Council. Students are expected to demand of themselves and their fellow students complete respect for the Honor Code. Ignorance of the regulations is not a defense for abuse of regulations. All incoming students attend a mandatory signing ceremony and education program for the Honor System at the beginning of the fall semester.

Student Conduct

All students who take courses, live in residence halls, or otherwise participate in the activities of the University are within the jurisdiction of the University's judicial bodies, whether or not they are registered primarily at Vanderbilt. Policies governing student conduct are published in the *Student Handbook*, on bulletin boards, or by other reasonable means of notification. The Undergraduate Student Conduct Council has original jurisdiction over all matters of nonacademic misconduct involving undergraduate students.

Residential Living

Residential living at Vanderbilt began in the 1880s when six cottages were constructed in response to a demand for on-campus housing. Today 5,000 students live on campus: this includes 87 percent of the undergraduates and 5 percent of the graduate and professional students.

Undergraduate Housing

Several types of housing are offered to meet the needs of a diverse student body—rooms, suites, singles, doubles, apartments, and lodges.

Some housing is segregated by gender, some is coresidential. In the coresidential living space areas, men and women may be housed in different living spaces on the same floor but not in the same living space. Six officers from each fraternity and sorority may live in their fraternity or sorority houses.

TeleVu, the residence hall cable system, and ResNet, the residential data network, are available in each dorm room of every residence hall on campus. Residents with personal computers can connect to ResNet for high speed data services.

Freshmen

Freshman men and women are usually housed in Kissam and Branscomb quadrangles and Barnard and Vanderbilt halls. Kissam Quadrangle consists of Hemingway, Reinke, Currey, Dyer, Mims, and Kissam halls. The halls are air conditioned, and the single rooms on each floor share a common bath facility. All residence halls have basic room furnishings that include telephone, bed, dresser, desk, chairs, and window coverings. Lounges, study rooms, and television rooms are located within the quadrangle.

Branscomb Quadrangle (Lupton, Scales, Stapleton, and Vaughn) is also air conditioned. There are two physical arrangements: (a) double rooms with a

common bath on each floor and (b) suites of two double rooms connected by a half bath (with a common bath on each floor). The complex contains laundry facilities, lounges, study rooms, a computer lab, a Learning Center, and a convenience store.

Barnard and Vanderbilt Halls house freshmen in single and double air-conditioned rooms. Common area bath facilities are located on each floor. Study lounges, a television lounge, a convenience store, music practice rooms, and a laundry are located in the Vanderbilt/Barnard complex.

Upperclass Students

Cole and Tolman halls are located near Sarratt Student Center. Slightly more than 100 upperclass students live in single rooms in each hall. Cole and Tolman halls house upperclass female and male populations, respectively.

East, North, Gillette, West, and Confederate Memorial halls on the Peabody area of campus contain primarily double rooms with common bath facilities on each floor. All are air conditioned. Peabody residence halls have study lounges, television lounges, and common kitchens. There are two laundry facilities, several music practice rooms, and a convenience store located on the Peabody campus.

Upperclass students are also housed in the twelve-story, air-conditioned Carmichael Towers complex located on West End Avenue. Carmichael has two styles of living arrangements: (a) single and double rooms arranged in six-person suites with bath, kitchen, and common area and (b) single and double rooms arranged on halls, with common bath facilities and a lounge on each floor. The Towers are complete with lounges, meeting rooms, laundry facilities, storage rooms, recreation areas, music practice rooms, a convenience store, and a Food Court.

At the south end of the campus are Chaffin Place, Lewis House, Morgan House, and Mayfield Place. Chaffin contains two-bedroom apartments that house four students. Students share efficiencies and one- and two-bedroom apartments in Morgan and Lewis Houses. In Mayfield, units of ten single rooms cluster around a two-story living room area. A laundry facility and a convenience store are located in this residential area.

Special Interest Houses

McGill Hall is the home of the McGill Project, designed to stimulate and foster discussion and exploration of philosophical issues between students and faculty. Faculty members meet with residents in McGill for informal discussion (open to all students) and formal classwork. Residents also participate in weekly suppers, movies, and recreation.

The goals of McTyeire House are to improve the fluency level of McTyeire residents in Chinese, French, German, Japanese, or Spanish, and to expand communication between international and American students throughout the University by means of discussions, programs, and international coffees and festivals. Space is available for ninety-four upperclass students in single rooms. Living in McTyeire carries a commitment to take a predetermined percentage of one's meals in the McTyeire dining room.

Mayfield Living/Learning lodges are set aside for groups of ten students who want to establish their own special-interest houses. Such programs have included Arts, Community Service, Computers, Environment/Recycling, World Religions, Music, and Wellness.

Residential Life Administration

The residential community at Vanderbilt is divided into six geographic areas, each of which has a full-time coordinator living within the area. Upperclass and graduate or professional students serve as Head Residents and Resident Advisers in the residence halls. A dean, two associate deans, and an associate director of Residential and Judicial Affairs also live on campus. For more information, visit the Web site, www.vanderbilt.edu/ResEd.

Residence halls for freshmen have RAs on each floor. Assistant directors and their student staff are responsible for maintaining an atmosphere conducive to the students' general welfare.

Interhall, the representative body of student residents, plans programs, recreational and social activities, and advises the residential affairs administration on policy matters.

Room Assignment

Freshmen. A request for room assignment is part of the admission application.

Returning Upperclass Students. Returning unmarried upperclass students receive their housing assignments through a random selection process in the spring. A local hall selection is held for students who want to remain in the same room or to change rooms within the same residence hall. Eligibility for participation is determined by the Associate Dean with advice from Interhall. A specific percentage of current residents of a suite, apartment, or lodge must return in order to reserve that living space.

Transfer and Former Students. Requests for room assignments by new transfer students and former students returning to campus are made through the Office of Residential and Judicial Affairs, and are determined by the date of deposit. The University tries to accommodate as many transfer students as possible, but acceptance at Vanderbilt does not guarantee campus housing.

The Vanderbilt Card

The Vanderbilt Card is the student ID card. It can be used to access debit spending accounts, the Dinner Plan, and campus buildings such as residence halls, libraries, academic buildings, and the Student Recreation Center.

Vanderbilt Cards are issued at the Vanderbilt University Card Office from 8:30 a.m. to 4:00 p.m. at 184 Sarratt Student Center. For more information, see the Web site at www.vanderbilt.edu/vucard.

Eating on Campus

Vanderbilt Dining operates several facilities throughout campus that provide a variety of food and services. Through a Vanderbilt Card account, a stu-

dent can purchase food at any of these locations. Two accounts are available: the Flexible Spending Account (FSA) for purchases from the Bookstore or any other on-campus facility that accepts the Vanderbilt Card, and a Campus Dining Account (CDA) for food purchases. All first-year students living in freshman housing are required to enroll in the Dinner Plan, which provides seven all-you-care-to-eat meals a week for one price, paid at the beginning of the semester. Cash and checks are also accepted in all units. For more information, visit the Web site, www.vanderbilt.edu/dining.

Services to Students

Student Records (Buckley Amendment)

Vanderbilt University is subject to the provisions of federal law known as the Family Educational Rights and Privacy Act (also referred to as the Buckley Amendment or FERPA). This act affords matriculated students certain rights with respect to their educational records. These rights include:

The right to inspect and review their education records within 45 days of the day the University receives a request for access. Students should submit to the University Registrar written requests that identify the record(s) they wish to inspect. The University Registrar will make arrangements for access and notify the student of the time and place where the records may be inspected. If the University Registrar does not maintain the records, the student will be directed to the University official to whom the request should be addressed.

The right to request the amendment of any part of their education records that a student believes is inaccurate or misleading. Students who wish to request an amendment to their educational record should write the University official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading. If the University decides not to amend the record as requested by the student, the student will be notified of the decision and advised of his or her right to a hearing.

The right to consent to disclosures of personally identifiable information contained in the student's education records to third parties, except in situations that FERPA allows disclosure without the student's consent. One such situation is disclosure to school officials with legitimate educational interests. A "school official" is a person employed by the University in an administrative, supervisory, academic or research, or support staff position (including University law enforcement personnel and health staff); a person or company with whom the University has contracted; a member of the Board of Trust; or a student serving on an official University committee, such as the Honor Council, Student Conduct Council, or a grievance committee, or assisting another school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility.

The Buckley Amendment provides the University the ability to designate certain student information as "directory information." Directory information may be made available to any person without the student's consent unless the student gives notice as provided for below. Vanderbilt has designated the

following as directory information: the student's name, addresses, telephone number, e-mail address, date and place of birth, major field of study, school, classification, participation in officially recognized activities and sports, weights and heights of members of athletic teams, dates of attendance, degrees and awards received, the most recent previous educational agency or institution attended by the student, and other similar information. Any new entering or currently enrolled student who does not wish disclosure of directory information should notify the University Registrar in writing. Such notification must be received by August 1st to assure that the student's address and phone number do not appear in any printed Vanderbilt Directory. No element of directory information as defined above is released for students who request nondisclosure except in situations allowed by law. The request to withhold directory information will remain in effect as long as the student continues to be enrolled, or until the student files a written request with the University Registrar to discontinue the withholding. To continue nondisclosure of directory information after a student ceases to be enrolled, a written request for continuance must be filed with the University Registrar during the student's last term of attendance.

If a student believes the University has failed to comply with the Buckley Amendment he or she may file a complaint using the Student Complaint and Grievance Procedure as outlined in the *Student Handbook*. If dissatisfied with the outcome of this procedure, a student may file a written complaint with the Family Policy and Regulations Office, U.S. Department of Education, Washington, D.C. 20202.

Questions about the application of the provisions of the Family Educational Rights and Privacy Act should be directed to the University Registrar or to the Office of University Relations and General Counsel.

Vanderbilt Telephone Directory Listings

Individual listings in the student section of the *Vanderbilt Directory* will consist of the student's full name, school, academic classification, local phone number, local address, box number, and permanent address. A temporary undergraduate student directory will be available when students arrive for fall orientation. Students who want their names to be excluded from either directory must notify the University Registrar in writing, by 1 August. For more information, see the Web site, <http://directory.vanderbilt.edu/>.

In addition to the hard copy *Vanderbilt Directory*, there is also an on-line VUNet e-mail directory accessible only to Vanderbilt users both on- and off-campus via the World Wide Web. At the time students initially set up their VUNet IDs and passwords, they have the option of withholding their e-mail address from the directory if they so choose. For more information, see the Web site, www.vanderbilt.edu/VUNet.

Counseling and Advisory Services

Advising is an important part of Vanderbilt's central mission to help each student achieve individual goals. Many support services are provided, including pre-major and major academic advising and career and personal counseling. Residence hall staff is continuously on call.

Deans and professional staff in academic programs and in all areas of student life offer counseling services to students:

- The Career Center
- Deans and Area Directors of the Residence Halls
- Faculty Advisers
- Health Professions Advisers
- International Student and Scholar Services
- Learning Center
- Office of Associate Provost for Student Affairs
- Office of Campus Student Services
- Office of Student Activities
- Office of the Dean of Students
- Office of the University Chaplain and Affiliated Ministries
- Opportunity Development Center
- Pre-Business Advisers
- Pre-Law Advisers
- Psychological and Counseling Center
- Student Health Center
- Teacher Education Adviser, Arts and Science
- Teacher Licensure Office, Peabody College

Career Center

The Vanderbilt Career Center helps students and alumni of Vanderbilt University develop and implement career plans. This is accomplished by offering a variety of services and educational programs that help students and alumni determine career options, learn job search skills, gain career-related experience, and connect with employers and graduate/professional schools.

Services include individual career advising; career resource center; graduate and professional school services; career-related seminars and workshops; resume consultation; video interview training; internship information service; career fairs; campus interviews; part-time and full-time job listings; resume referrals; and alumni services. For detailed information about the Career Center, view our Web site at www.vanderbilt.edu/career.

Services for Students with Disabilities

Vanderbilt is committed to the provisions of the Rehabilitation Act of 1973 and Americans with Disabilities Act as it strives to be an inclusive community for students with disabilities. Students seeking accommodations for any type of disability are encouraged to contact the Opportunity Development Center. Services include, but are not limited to, extended time for testing, assistance with locating sign language interpreters, audio-taped textbooks, physical adaptations, notetakers, and reading services. Accommodations are tailored

to meet the needs of each student with a documented disability. The Opportunity Development Center also serves as a resource regarding complaints of unlawful discrimination as defined by state and federal laws.

Each school has appointed a University Disability Monitor responsible for monitoring and improving disability services in academic programs. Contact your dean to find out the Disability Monitor for your school. Specific concerns pertaining to services for people with disabilities or any disability issue should be directed to the Assistant Director for Disability Services, Opportunity Development Center, Station B 1809, Nashville, Tennessee 37235; phone 322-4705 (V/TDD); fax 343-0671; www.vanderbilt.edu/odc/.

Psychological and Counseling Center

The Psychological and Counseling Center is a broad-based service center available to students, faculty, staff, and their immediate families. Services include: 1) family, couples, individual, and group counseling and psychotherapy; 2) psychological and educational assessment; 3) career assessment and counseling; assertiveness training; marital communication; individual study skills techniques; weight, stress, and time management; group support programs for learning skills such as relaxation; administration of national testing programs; 4) outreach and consultation with departments; special programming related to diversity issues; campus speakers and educational programs.

Eligible persons may make appointments by visiting the Center or by calling 322-2571. Services are confidential to the extent permitted by law. For more information, see the Web site, www.vanderbilt.edu/pcc.

Student Health Center

The Vanderbilt Student Health Center (SHC) in the Zerfoss Building is a student-oriented facility that provides routine and acute medical care similar to services rendered in a private physician's office or HMO.

The following primary care health services are provided to students registered in degree status without charge and without copayment: visits to staff physicians and nurse practitioners; personal and confidential counseling by mental health professionals; routine procedures; educational information and speakers for campus groups; some routine laboratory tests that are performed at the SHC; and specialty clinics held at the SHC.

These SHC primary care services are designed to complement the student's own insurance policy, HMO, MCO, etc., coverage to provide comprehensive care. Students are billed for any services provided outside the SHC or by the Vanderbilt University Medical Center.

Dr. John W. Greene, director of the Student Health Center, is a tenured faculty member of the Vanderbilt University School of Medicine. The entire medical staff is composed of physicians and nurse practitioners who have chosen student health as a primary interest and responsibility.

The Zerfoss Student Health Center is open from 8:00 a.m. to 4:30 p.m., Monday through Friday, and 8:30 a.m. until noon on Saturday, except during scheduled breaks and summer. Students should call ahead to schedule appointments (322-2427). A student with an urgent problem will be given an

appointment that same day, or “worked in” if no appointment is available. When the Health Center is closed, students needing acute medical care may go to the Emergency Department of Vanderbilt University Hospital. They will be charged by the VU Medical Center for Emergency Department services.

Students may also call 322-2427 for twenty-four-hour emergency phone consultation, which is available seven days a week (except during summer and scheduled academic breaks). On call Student Health professionals take calls after regular hours. Calls between 11:00 p.m. and 7:00 a.m. are handled by the Vanderbilt University Emergency Department triage staff. More information is available on the Web site, www.vanderbilt.edu/student_health/vush.htm.

Student Accident and Sickness Insurance Plan

All degree-seeking students registered for 4 or more hours at Vanderbilt are required to have adequate health insurance coverage. The University offers a sickness and accident insurance plan that is designed to provide hospital, surgical, and major medical benefits. A brochure explaining the limits, exclusions, and benefits of insurance coverage is available to students at registration, in the Office of Student Accounts, or at the Student Health Center.

The annual premium is in addition to tuition and is automatically billed to the student’s account. Coverage extends from 20 August until 19 August of the following year, whether a student remains in school or is away from the University.

A student who does not want to subscribe to the insurance plan offered through the University must notify the Office of Student Accounts of adequate coverage under another policy. A new student must complete and return the acceptance/waiver card that is available at registration or in the Office of Student Accounts. This card must be submitted at or by registration for the fall or spring semester. A returning student needs to submit an acceptance/waiver card in order to change her or his current insurance status.

Family Coverage. Additional premiums are charged for family hospital coverage. Married students who want to provide coverage for their families may secure application forms by contacting the on-campus Chickering representative, 322-4688.

International Student Coverage

International students and their dependents residing in the United States are required to purchase the University’s international student health and accident insurance plan. No exceptions are made unless, in the judgment of the University, adequate coverage is provided from some other source. This insurance is required for part-time as well as full-time students. Information and application forms are provided through the Student Health Center.

Bishop Joseph Johnson Black Cultural Center

The Bishop Joseph Johnson Black Cultural Center (BJJBCC) provides African American educational and cultural programming for the University

community, and retention services for African American students. Dedicated in 1984, and named for the first African American student admitted to Vanderbilt, Bishop Joseph Johnson (B.D. 1954, Ph.D. 1958), the Center reinforces Vanderbilt's effort to promote diversity through the development of programs that foster understanding and appreciation of the African American experience.

The Center provides a "home away from home" environment for African American students and sponsors lectures, symposia, academic materials, art exhibitions, and other activities for the University and the community. Programs are publicized in a monthly campus calendar and a bi-monthly newsletter, *News from the House*, which is distributed to African American students and other campus addresses by request. The Black Student Alliance (BSA) and the Cultural Center Advisory Board work closely with the Center. The Center is open to the campus for small meetings and gatherings. More information is available on the Web site, www.vanderbilt.edu/BCC/.

Child Care Center

Vanderbilt Child Care Center operates as a service to University staff members, faculty members, and students. The program serves children from six weeks to five years of age, and offers placement through a waiting list. The center is accredited by the National Academy of Early Childhood Programs.

Margaret Cuninggim Women's Center

The Women's Center was established in 1978 to provide support for women at Vanderbilt as well as resources about women, gender, and feminism for the University community. In 1987, the center was named in memory of Margaret Cuninggim, dean of women and later dean of student services at Vanderbilt.

Programs for students, staff, and faculty are scheduled throughout the fall and spring semesters and are publicized on the Web site, www.vanderbilt.edu/WomensCenter/womenctr.htm, and in the monthly newsletter *Women's VU*, which is distributed without charge to campus addresses on request. A student group that works closely with the Women's Center, Students for Women's Concerns, is open to all interested students, both male and female.

The center houses a small library with an excellent collection of unbound materials such as clippings and reprints as well as journals, books, and tapes. Books and tapes circulate for three weeks. Copy facilities are available.

Parking and Vehicle Registration

Parking space on campus is limited. Motor vehicles operated on campus *at any time* by students, faculty, or staff must be registered with the Office of Traffic and Parking. A fee is charged. Parking regulations are published annually and are strictly enforced. More information is available at www.vanderbilt.edu/traffic_parking/.

Bicycles must be registered with the Police and Security Department.

Religious Life

The Office of the University Chaplain and Affiliated Ministries exists to provide occasions for religious reflection and avenues for service, worship, and action. There are many opportunities to clarify one's values, examine personal faith, and develop a sense of social responsibility.

The Holocaust and the Martin Luther King Jr. lecture series, as well as Project Dialogue, provide lectures and programs investigating moral issues, political problems, and religious questions.

Baptist, Episcopal, Jewish, Presbyterian, Reformed University Fellowship, Roman Catholic, and United Methodist chaplains work with individuals and student groups. Provisions for worship are also made for other student religious groups.

Police and Security Department

The mission of the Police and Security Department (322-2745) is to protect and serve students, faculty, staff, and the public. Campus police officers are carefully selected through a rigorous process to ensure suitability for campus police work. They are required to complete basic police recruit training at a certified police academy and meet annual in-service training requirements. In addition, they are commissioned through the authority of the Chief of Police of the Metropolitan Government of Nashville and Davidson County.

In order to meet its obligations and duty to the Vanderbilt community, the Police and Security Department has programs and services in place to educate and protect our community. VUPD operates a SafeTrips program consisting of two full services. The first component is a van that makes six stops on campus continuously from dusk until 2:00 a.m. The other component is a walking escort on campus during the hours of darkness. The telephone number for the walking escort service is 1-8888.

Blue light emergency telephones are strategically placed around the campus. When activated, these phones automatically access VUPD's twenty-four-hour emergency line. Using this phone automatically identifies the area of the caller to our communications division. The emergency line can also be called by dialing 421-1911 (1-1911 on campus). The emergency phone system should be used to report medical emergencies, crimes in progress, fires, or to request immediate assistance for a life-threatening situation. For emergency situations that happen off campus, individuals should use 911 for response by local police, fire, and medical services.

The Crime Prevention Division of the Police and Security Department offers several programs to increase awareness among the Vanderbilt community and its neighbors. In addition to these services, it publishes and distributes informational resources on a variety of crime prevention topics. For further information on available programs and literature, call 322-2558 or e-mail crimeprevention.atwood@vanderbilt.edu.

Recovered property may be turned in at any time to the Police and Security Department. Inquiries about lost items may be made by contacting VUPD's Lost and Found Office, Monday through Friday, 8:30 a.m. to 4:00 p.m. The

telephone number is 343-5371.

Information on security measures and a summary of crime statistics for the Vanderbilt campus are available from the Police and Security Department, 2800 Vanderbilt Place, Nashville, Tennessee 37212. More information is available from the Web site, *www.vanderbilt.edu/VUPD/vupdhome.htm*.

Extracurricular Activities

Student Governance

The Student Government Association (SGA) provides a number of activities, programs, and services through its two divisions: the Student Senate, composed of representatives from each class and school, and the Executive Cabinet, the program division.

Students are encouraged to become involved with the SGA through the Student Senate or committees and to participate in the student association or council of their own schools. Undergraduate students are also appointed to membership on the Community Affairs Board, an organization that represents all segments of the University: students, faculty, administration, and staff. The Community Affairs Board discusses and debates policy matters confronting the University and makes recommendations for major policy changes.

For more information, see the Web site, *www.vanderbilt.edu/sga*.

Community Service

Community service is an important part of the student experience at Vanderbilt. Nashville's vibrant urban neighborhoods provide ample opportunities for students to make real-life connections to their studies, achieving both personal growth and meaningful action through work with the community. The Office of Volunteer Activities (OVA) facilitates student efforts to become involved with our neighbors outside Vanderbilt through individual work with community agencies and groups, and also through more than thirty Student Service Groups. Student-run service groups like Vanderbilt Prison Project, Yes You Can, Room in the Inn, and Say-I, to name a few, organize high-quality programs that address such diverse issues as homelessness, restorative justice in Tennessee prisons, educational equality for K-12 students, racial justice, pet therapy for the elderly, and many more. In addition to service to the community, these groups provide opportunities for volunteers to form lasting relationships with other students.

The University is justly proud of student efforts. Support for students comes through educational and outreach programs of the OVA, the Ingram Community Service Scholarship, and a well established Alternative Spring Break (ASB) program that sends approximately 400 students across the country and to foreign countries. ASB participants serve our far-flung neighbors during the March vacation. In addition, interest in community service

and the presence on campus of several well-known Service-Learning scholars has resulted in a growing number of Service-Learning courses that combine academics with hands-on service. These courses are very popular and many students find them to be among their most rewarding college experiences.

Student government, religious and ethnic organizations, political clubs, athletic teams, and fraternities and sororities all participate in community service activities. With a wealth of campus and community resources across disciplines and organizations, the student interested in community service can find opportunities in virtually any area.

Sarratt Student Center

The Sarratt Student Center (www.vanderbilt.edu/sarratt), named for former mathematics professor and dean of students, Madison Sarratt, provides a variety of facilities, programs, and activities. The Center houses a cinema; an art gallery, art studios and darkrooms for classes and individual projects; work and office spaces for student organizations; comfortable reading and study lounges fully wired for Internet access; large and small meeting rooms; and large, open commons and courtyard areas for receptions or informal gathering. The Center also houses the Overcup Oak restaurant, Stonehenge Cafe, and leads directly to Rand Dining Room and the Varsity Market. The student center's six student-run committees plan concerts, film screenings, classes, speakers, receptions, gallery showings, and many other events throughout the campus. The Center's Welcome Desk serves as a campus information center and is a Ticketmaster™ outlet, handling ticket sales for most of the University's and Nashville's cultural events. Sarratt Student Center has just completed an extensive renovation project and now is home to Student Affairs, the Office of the Dean of Students, the Vanderbilt Card Office, and Vanderbilt Student Communications (including student newspaper, radio station, and yearbook).

Vanderbilt Student Communications, Inc. (VSC)

VSC has jurisdiction over undergraduate publications that are supported by the student activities fee, the campus radio station, and Vanderbilt Television. VSC functions chiefly to elect editors and business managers, supervise and audit financial records, maintain professional standards, and develop communications opportunities for students. VSC serves no programmatic or editorial function.

Among the divisions of the corporation are the *Hustler*, the campus newspaper; *Versus*, a magazine; the *Commodore* yearbook; WRVU, the student-operated FM radio station; *The Vanderbilt Review*, an annual literary-photo magazine; and Vanderbilt Television.

Recreation and Sports

Physical education is not required for undergraduates, but almost two-thirds of the students participate in sport clubs, intramurals, and activity

classes. Numerous classes are offered in swimming, volleyball, racquetball, flycasting, and scuba, along with *tae kwon do*, rock climbing, and kayaking.

The Student Recreation Center houses a swimming pool; three courts for basketball, volleyball, and badminton; six racquetball and two squash courts; a weight and Nautilus room; a wood-floor activity room; a rock-climbing wall; an indoor track; a mat room; locker rooms; a Wellness Center; and the Time-Out Cafe. Lighted outside basketball and sand volleyball courts and an Outdoor Recreation facility complement the center.

Men's and women's intramurals are popular on campus, and intramural teams are formed by residence halls and independent groups as well as by sororities and fraternities.

Twenty-five sport clubs, many created at the request of students, provide opportunity for participation in such favorites as fencing, rugby, and lacrosse. Southeastern Conference eligibility standards are not required for sport clubs.

The University recreation and athletic facilities include gymnasiums, indoor and outdoor tracks, an indoor tennis center and many outdoor hard courts, and softball diamonds. The ten acres of playing fields are irrigated and maintained to assure prime field conditions, and they are lighted for night use.

All students pay a mandatory recreation fee which supports the facilities, fields, and programs (see the chapter on Financial Information).

Varsity Athletics

Students interested in more highly competitive sports on the varsity level will find challenges in intercollegiate athletics sanctioned by the Southeastern Conference and NCAA. Women's teams compete in basketball, golf, tennis, cross country, soccer, lacrosse, and indoor and outdoor track. Men's teams compete in the Southeastern Conference in football, basketball, baseball, golf, tennis, and cross country. Men's soccer is in the Missouri Valley Conference.

Cultural Activities on the Campus

Working through volunteer student committees that plan and execute the programs, Sarratt Student Center sponsors twelve to fifteen dance, music, and theatre events each year, featuring renowned artists. Student committees select the artists and handle all arrangements for the performances.

Three campus galleries regularly exhibit the work of recognized artists as well as students. Vanderbilt University Theatre annually presents four major productions and several one-act plays for which all students are invited to audition. Other campus groups and touring companies also give dramatic presentations during the year.

Noncredit classes at all levels are offered in a wide variety of dance styles, including ballet, modern, jazz, ballroom, and ethnic dance. Master classes are given on a regular basis. Momentum, the student dance company, sponsors a dance concert at the end of each semester.

Opportunities are available for student musicians in several groups. The Concert Choir and Chamber Singers; Chamber Choir, Symphonic Choir, and Opera Theatre; Vanderbilt Orchestra and Chamber Orchestra; and the Wind Ensemble and Jazz Band present a number of campus concerts each year.

Outstanding scholars and speakers visit the University frequently, enriching the academic and cultural life of the campus in many ways. Various academic departments sponsor regular speaker programs, as do the student-initiated Impact Symposium, the Speakers Committee, and the Gertrude Vanderbilt and Harold S. Vanderbilt Visiting Writers program.

Admission

ADMISSION as a freshman to Vanderbilt represents a selection based on the academic and personal records of applicants. All available information is considered, including secondary school academic record, evidence of academic maturity and independence, extracurricular activities, contributions to the school and community, and scores on standardized tests.

The admission process is designed to select a student body with high standards of scholarship and personal character and with serious educational aims. An Admissions Committee of each Vanderbilt school or college is actively involved in the selection process. An admissions policy that governs the Admissions Committee's selection processes has been set by the faculty. Please refer to the nondiscrimination statement on the inside front cover.

Admission to the undergraduate schools is coordinated by the Office of Undergraduate Admissions. Prospective students are encouraged to investigate the University by visiting the campus. Admissions staff members are available to answer questions, arrange for campus tours, provide additional information about degree programs, and link visitors with appropriate campus offices and members of the University community.

Academic Preparation

A candidate for admission must present a transcript of work from an accredited secondary school and the recommendation of the guidance counselor or the head of school. The high school record must show at least fifteen academic units of college preparatory work (a unit is a year's study in one subject), with grades indicating intellectual ability and promise. The pattern of courses should show purpose and continuity and furnish a background for the freshman curriculum offered at Vanderbilt.

Specific entrance requirements are as follows:

College of Arts and Science. At least 4 units of English, 2 units of algebra, 1 unit of plane geometry, 2 units of one foreign language (Latin, Greek, or a modern language), 2 units of science, and 2 units of social science are required. Additional units of mathematics, foreign language, science, and social science are strongly recommended.

Applicants of ability and achievement who do not entirely meet these requirements may request special consideration. Students without the requisite units in English or mathematics may be admitted on condition that they make up the missing work prior to their first registration in the College. Students without the requisite two years in foreign language must enroll during their first semester in a foreign language course and must remain continuously enrolled until they successfully complete a full year of one foreign language.

They must complete this requirement before the end of their fourth semester in the College.

Blair School of Music. It is strongly recommended that applicants have at least 4 units of English, 2 units of algebra, 1 unit of plane geometry, 1 unit of history, and 2 units of a single foreign language. Students with fewer units may be offered admission but must complete the missing work at Vanderbilt.

Audition/ Portfolio. Applicants to the Blair School performance degree program are required to audition on their primary instrument (or in voice). Auditions will be held at the school on 2 December, 26 and 27 January, 9 and 10 February, and 23 and 24 February. A high-quality cassette tape is usually an acceptable substitute for applicants living outside a 400-mile radius of Nashville. Any student who is unable to travel to campus or to attend a scheduled audition weekend should contact the Blair School to discuss alternate plans. All applicants to the musical arts degree program may audition by cassette. Students seeking admission to the composition/theory degree program must interview and present a portfolio of original compositions. Any student auditioning on percussion must do so in person; tapes are not acceptable for this program.

School of Engineering. It is strongly recommended that applicants have at least 4 units of English, 2 units of algebra, 1 unit of geometry, 1 unit of trigonometry, and 2 units of science. Two units of foreign language and 1 unit of history are also desirable. Formal score reports from the agency are required.

Peabody College. It is strongly recommended that applicants have at least 4 units of English, 2 units of algebra, 1 unit of geometry, 2 units of science, and 1 unit of history.

Application Procedure

1. Applications for admission are available from the Office of Undergraduate Admissions. Applicants must submit the various parts of the application by 5 January for consideration for admission for the following fall semester. Certain scholarships require additional application materials; interested students should contact the Office of Undergraduate Admissions for more information. The Admissions Committee will consider applications for admission submitted after 5 January, provided space is available. Admission decisions will be mailed by 1 April.

2. At the time of filing an application, applicants must arrange for their high school to send a transcript of their record to the Office of Undergraduate Admissions.

3. Applicants are responsible for having formal reports of their standardized test scores sent to Vanderbilt by the testing agency.

4. The \$50 application fee is not refundable. A nonrefundable matriculation deposit of \$400 is required upon acceptance of the offer of admission. This deposit is credited to the student's account, and the amount is deducted from the bill for the first semester. Students with financial hardship may request a waiver of these fees. A medical questionnaire also must be completed after the matriculation deposit is paid.

5. Students who are offered admission for the fall semester, but who want to begin their studies with the Summer Session, must notify the Office of Undergraduate Admissions before 29 May. No additional application is necessary.

Early Decision Plan

This plan is designed to give an early admission decision to well-qualified students whose first choice is Vanderbilt. In order to apply under the Early Decision Plan, the student must complete the following steps:

1. Complete all parts of the regular application for admission, available from the Office of Undergraduate Admissions, and return all parts with the appropriate Early Decision Plan box checked on each part of the application and the \$50 nonrefundable application fee before 1 November for Early Decision I and by 5 January for Early Decision II.

2. Sign the statement that Vanderbilt is your first choice, affirm your intention to enroll at Vanderbilt if offered admission under the Early Decision Plan, and agree to withdraw applications to other colleges after Early Decision admission. Have your parent and guidance counselor sign your application.

3. Have an official transcript of high school work through the junior year be sent to the Office of Undergraduate Admissions, with a list of courses being taken and to be taken in the senior year.

4. Have the testing agency send Vanderbilt the official scores of SAT-I and/or ACT.

5. Blair School of Music applicants must audition or submit a portfolio (see Audition/Portfolio in the section on Academic Preparation above) by 4 December for Early Decision I and by 5 January for Early Decision II.

Applicants under the Early Decision Plan may be admitted, denied admission, or deferred for later consideration in competition with all applicants at the regular decision process in the spring. Applicants who are deferred until spring are encouraged to submit additional test scores, seventh semester transcripts, and any other information that may be helpful to the Admissions Committee.

Admission without Diploma

Certain students who are recommended by their high school principals and are considered by the Admissions Committee to be ready for college work may be admitted following the completion of their junior year in high school. This program of admission without high school diploma is intended to serve applicants of unusual promise who will benefit from beginning their college career a year early. Application should be made by 5 January of the junior year in high school. The Admissions Committee may require additional examinations over and above those normally required for entrance. Other criteria will also be considered, such as maturity and motivation. The University encourages students to contact the Office of Undergraduate Admissions prior to filing the application.

Advanced Placement

Honors courses and other accelerated study in high school are excellent preparation for Vanderbilt. The well-established advanced-placement policy endeavors to recognize exceptional high school preparation, to avoid requiring freshmen to take courses clearly mastered in high school, and to encourage students to begin their college learning experience at the level most appropriate to their preparation. Advanced placement may be decided on the basis of good performance on the College Board Advanced Placement Examinations, on the College Board SAT II Subject Tests, on International Baccalaureate tests, or, in some cases, on placement tests given by Vanderbilt. Entering students who have taken the British G.C.E. "A" level examinations, the Advanced International Certificate of Education examinations, or similar tests, such as the French *baccalauréat* or the Swiss *maturité* examinations, may submit copies of the syllabi and an official report of the grades earned for evaluation for credit by appropriate departments. Appropriate documentation should be submitted to the Office of Undergraduate Admissions before matriculation at Vanderbilt.

Advanced Credit

Advanced Placement Examination grades accepted for advanced placement with credit by the various departments at Vanderbilt are listed below.

United States Government and Politics. Grade of 4 or 5 earns 3 hours credit for Political Science 100.

United States History. Grade of 4 or 5 earns 6 hours credit for History 170–171.

Biology. Grade of 4 or 5 earns 4 hours credit for Biology 100.

Chemistry. Grade of 5 earns 8 hours credit for 102a–102b and 104a–104b. A grade 4 permits entry into Chemistry 103a.

Comparative Government and Politics. Grade of 4 or 5 earns 3 hours credit for Political Science 101.

Computer Science. Grade of 4 or 5 on the A or AB examination earns 3 hours credit for Computer Science 100.

Economics. Grade of 4 or 5 in macroeconomics earns 3 hours credit for 100; grade of 4 or 5 in microeconomics earns 3 hours credit for 101.

English. Grade of 4 or 5 in English language and composition or English literature and composition earns 6 hours credit for English 104W and 105W.

Environmental Science. Grade of 4 or 5 earns 4 hours of credit for Geology 104.

European History. Grade of 4 or 5 earns 6 hours credit for History 100–101.

Fine Arts. Grade of 4 or 5 in art history earns 6 hours credit for Fine Arts 110–111. Grade of 4 or 5 in art studio earns 6 hours credit.

French. Grade of 4 or 5 in language earns 6 hours credit for French 104b and 201. Grade of 4 or 5 in literature earns 6 hours credit for 104b and 220.

German. Grade of 4 or 5 in language earns 6 hours credit for German 103 and 104.

Latin. Grade of 4 or 5 in Vergil earns 3 hours credit for Latin 104. Grade of 4 or 5 in Latin Literature earns 3 hours elective credit at the 200 level.

Mathematics. Grade of 4 or 5 earns up to 8 hours credit in analytic geometry and calculus. The precise amount of credit depends on the Advanced Placement test (AB or BC) and on the mathematics course, if any, in which the student enrolls at Vanderbilt.

Music. Grade of 5 in music theory earns two hours credit for MUSC 120a or 121; a grade of 4 may earn credit pending evaluation by the department. A grade of 4 or 5 in music listening and literature may earn three hours credit in MUSL 141 pending evaluation by the department.

Physics. Grade of 4 or 5 in the B examination earns 8 hours credit for Physics 110a–110b and 111a–111b. Grade of 4 or 5 in the C examination earns 4 hours credit for Physics 116a or 117a.

Psychology. Grade of 4 or 5 earns 3 hours credit for Psychology 101.

Spanish. Grade of 4 in language or literature earns 5 hours credit for Spanish 104; grade of 5 earns 8 hours credit for 104 and 202.

Statistics. Grade of 4 or 5 earns 3 hours credit for Mathematics 127a.

The amount of credit that may be awarded corresponds to the amount of course work waived, up to a maximum of 8 hours in any one field. Advanced Placement credit does not affect the Vanderbilt grade point average. Students are limited to a total of 30 credit hours earned by any combination of advanced placement and credit by departmental examination.

International Baccalaureate Credit Policy

International Baccalaureate test scores accepted for advanced credit by the various departments at Vanderbilt are listed below. Students who have taken tests in other areas may submit their scores to the Dean's Office for evaluation by the appropriate departments. The amount of credit that may be awarded is subject to the same limitations as credit for Advanced Placement.

Biology. Score of 6 or 7 (subsidiary or higher) earns 4 hours credit for 100.

Chemistry. Score of 6 or 7 (applied subsidiary) earns 8 hours credit for 101a–101b or (higher) Chemistry 102a–102b and 104a–104b.

Economics. Score of 6 or 7 (higher) earns 6 hours credit for Economics 100 and 101.

English. Score of 6 or 7 (subsidiary) earns 3 hours credit for English 100W or (higher) 6 hours credit for English 104W and 105W.

French. Score of 6 or 7 (subsidiary) earns 6 hours credit for French 104b and 201 or (higher) 3 hours credit for French 201 and 5 hours elective credit.

History. Score of 6 or 7 (higher) earns 3 hours elective credit.

Latin. Score of 6 or 7 (subsidiary) earns 3 hours credit for Latin 103 or (higher) 6 hours credit for Latin 103 and 104.

Mathematics. Score of 6 or 7 (subsidiary) earns 7 hours credit for Mathematics 140 and 180 or (higher) 8 hours credit for 155a and 180 and 1 hour elective credit.

Music. Score of 6 or 7 (subsidiary) earns 3 hours credit for MUSL 140 or (higher) 3 hours credit for MUSL 141.

Physics. Score of 6 or 7 (subsidiary) earns 6 hours credit for Physics 110a–110b or (higher) 8 hours credit for Physics 117a–117b.

Psychology. Score of 6 or 7 (subsidiary or higher) earns 3 hours credit for Psychology 101.

Russian. Score of 6 or 7 (subsidiary) earns 5 hours credit for Russian 102 or (higher) 6 hours credit for Russian 203–204.

Spanish. Score of 6 or 7 (subsidiary) earns 5 hours credit for Spanish 104 or (higher) 5 hours credit for Spanish 104 and 3 hours elective credit.

Pre-College Summer School Program

Upon completion of the sophomore or junior year in high school, students may enroll, at the freshman level, for regular work in the Vanderbilt summer session.

The following conditions must be met: (a) students must be in the upper 25 percent of their high school class and be recommended by their principal or counselor; (b) courses taken in the Vanderbilt summer session must be chosen by the student in consultation with his or her high school counselor and the director of the Division of Unclassified Studies so as to supplement and not overlap the total high school program. A student may take two courses in any one summer, or three courses by special authorization of the director of the Division of Unclassified Studies.

Course work done at Vanderbilt by a pre-college student may count toward the high school diploma and as part of the entrance requirements for regular admission to Vanderbilt. All course work done at Vanderbilt by pre-college students will be credited toward the degree for those who may subsequently matriculate at Vanderbilt, unless the course work is required for high school graduation. Admission to the pre-college summer school program does not admit a student as a regular entering freshman, nor does it commit the University to a student's admission.

Credit for Previous College Work

Entering freshmen who have taken pre-freshman college work during their junior or senior year in high school or during summers prior to their offer of admission to Vanderbilt must report such work to the Office of Undergraduate Admissions. At the student's request the dean of the school will determine whether such work may be credited toward the Vanderbilt degree. Credit will be awarded only if the course is regularly offered by an accredited two-year or four-year college or university, if the teacher was a regular faculty member of that institution, and if a majority of the students in the course were candidates for a degree at that institution. *This question of credit at Vanderbilt must be settled in advance of the student's first registration.*

The College of Arts and Science and Peabody College usually do not award credit for work done at other colleges in the summer immediately preceding the student's first enrollment at Vanderbilt. Summer work elsewhere will be accepted for credit only if an unusual educational opportunity can be demonstrated and if the courses sought are as rigorous as courses offered at Vander-

bilt. Approval for work to be taken elsewhere must be obtained in advance from the appropriate dean.

College of Arts and Science. In no case may credits completed elsewhere after the student has been offered admission by the College satisfy CPLE requirements.

International Students

Vanderbilt has a large international community representing approximately one hundred countries. The University welcomes the diversity international students bring to the campus and encourages academic and social interactions at all levels.

Admission. Students from other countries are required to complete **all** the admission requirements of the University. Applicants whose native language is not English are encouraged to present the results of the Test of English as a Foreign Language (TOEFL). You may access information regarding the TOEFL exam, including registration and sample tests, at www.toefl.org. Inquiries and requests for application forms should be addressed to TOEFL, Box 6151, Princeton, New Jersey 08541-6151, U.S.A.

English Instruction. Entering students who are not proficient in English should consider enrolling in an intensive English language program before beginning academic studies. In some cases the course may be required. Vanderbilt offers such a program at English for Internationals (EFI). Academic studies for credit may begin after recommendation by EFI in consultation with the student's academic adviser. For information about Vanderbilt's English language program, write to English for Internationals, Box 510 Peabody, Nashville, Tennessee 37203, U.S.A.; www.vanderbilt.edu/EFI.

Financial Resources. To meet requirements for entry into the United States for study, applicants must demonstrate that they have sufficient financial resources to meet the expected costs of their educational program. Applicants must provide documentary evidence of their financial resources before visa documents can be issued.

United States laws and regulations restrict the opportunity for international students to be employed. Students may be allowed to work off campus only under special circumstances. Many spouses and dependents of international students are not allowed to be employed while in the United States.

Limited need-based financial aid is available to students who are neither citizens nor permanent residents of the United States. The form to apply for this aid is contained in the applications. Admission for international students is "need-aware"; the larger amount of financial aid needed, the greater the competition for admission.

Health and Accident Insurance. International students and their dependents residing in the United States are required to purchase the University's international student health and accident insurance unless, in the judgment of the University, adequate coverage is provided from some other source. Information concerning the limits, exclusions, and benefits of this insurance may be obtained from Student Health Services.

Information. Assistance in non-academic matters before and during the international student's stay at Vanderbilt is provided by International Student and Scholar Services, Station B 351568, Nashville, Tennessee 37235-1568, U.S.A.; www.vanderbilt.edu/iss.

Transfer Students

Admission of transfer students from both inside and outside the University is competitive, with the primary criterion being academic merit. The priority deadline for fall and summer admission is 1 February, and the extended deadline is 1 April. The deadline for spring admission is 1 November.

To be considered for transfer admission to Vanderbilt, applicants must satisfy the following conditions:

1. Meet all freshman admission requirements, including results from either the SAT I and/or ACT;
2. Be in good standing at the institution last attended;
3. Provide an official secondary school transcript;
4. Provide official transcripts from each college attended; and
5. Agree to attend a Vanderbilt undergraduate program for at least four semesters (or 60 hours) of full-time work. Two of these semesters (or 30 hours) must be within the senior year.

Work presented for transfer must be from an accredited college and is subject to evaluation in light of the degree requirements of this University. Correspondence courses will not be considered for transfer credit.

Work transferred to Vanderbilt from another institution will not carry with it a grade point average. No course in which a grade below C- was received will be credited toward a degree offered by the University.

College of Arts and Science. Transfer students must complete at least 60 hours of work in the College.

Blair School of Music. Transfer students must comply with University standards. An audition (or, in the case of composition/theory applicants, the presentation of a portfolio and an interview) is required and is of major importance in the evaluation of the application. Transfer students will be assigned a level of program study based on the entrance audition. Credit for music courses may be granted following an examination at Blair. Credit for non-music courses is subject to evaluation by the College of Arts and Science. Transfer students must complete at least 63 hours at Blair.

School of Engineering. Transfer students must complete at least 60 hours of work in the School of Engineering.

Peabody College. Transfer students must complete at least 60 hours of work at Peabody. Two of the four semesters in residence must be the last two semesters of the student's degree program.

Intra-University Transfer

Students may request transfer from one undergraduate program of the University to another after having been enrolled on a full-time basis at Vanderbilt for two semesters. To be eligible for transfer, students must meet the requirements of the school they want to enter.

Applications should be submitted to the Dean of Students Office, 310 Sar-ratt Student Center by 20 October for the spring session and 16 March for the summer session or fall semester of the following year.

Students seeking transfer between schools within the University must meet the following requirements: (a) a student who has been in residence for two regular semesters must have a minimum of 24 hours and a cumulative grade point average of 1.800; (b) a student who has been in residence for three regular semesters must have a minimum of 39 hours and a cumulative grade point average of 1.850; (c) a student who has been in residence for four regular semesters must have a minimum of 54 hours and a cumulative grade point average of 1.900; (d) a student who has been in residence for five regular semesters must have a minimum of 69 hours and a cumulative grade point average of 1.950.

Students applying to the Blair School of Music must audition as part of the process. Students applying to the College of Arts and Science must meet the above requirements in transferable work as defined by the College of Arts and Science, as well as have the above stated grade point average in the five most recently completed courses in the College Program of Liberal Education (CPLE), repeat courses excluded.

Division of Unclassified Studies

The Division of Unclassified Studies provides an opportunity to take courses at Vanderbilt for (a) adults not interested in working toward a degree, (b) transient students working toward a degree at another institution (students in this category may not remain in the division more than two regular semesters and one summer session), (c) graduates of secondary schools who have not been offered admission to an undergraduate school or college (students in this category are admitted for a specified time), and (d) high school students who have received special permission to enroll in courses for college credit.

Such students register with the Division of Unclassified Studies. Records are kept of their work, and a transcript may be made available to them as it would be if they were regularly enrolled at Vanderbilt. Work taken in the division may be transferred to a degree-granting unit of the University provided it is work that will count as part of the program of that unit. Work so transferred may not amount to more than one-fourth of the requirements for the degree.

Students who want to enroll in the Division of Unclassified Studies must apply and be admitted to the division at least two weeks before the day of registration.

All University regulations, including the Honor System, apply to all full- or part-time students registered in the division.

The Division of Unclassified Studies does not offer any courses of its own. It gives members of the community an opportunity to register for courses offered by the University's degree-granting units. Degree candidates have priority in enrollment at Vanderbilt, and students should not register in the Division of Unclassified Studies if they are not prepared for this contingency. Tuition is charged at the rate of the school that actually offers the course.

Students enrolled in the Division of Unclassified Studies are not charged student activity, recreation center, or health insurance fees, and do not have access to recreation or student health services. Students enrolled in the Division of Unclassified Studies as full-time students (particularly transient students or others living in campus residence halls) may petition to be allowed to purchase these services.

Summer Session

The ten-week summer session begins in early June and ends early in August. Vanderbilt offers the summer program for regularly enrolled students at the University, for part-time students, and for students who are enrolled during the regular year in other colleges and universities (transient students).

Summer courses are offered by the College of Arts and Science, Blair School of Music, the School of Engineering, the Graduate School, the School of Nursing, and Peabody College.

Some courses extend over the entire summer session and complete the work of a full semester. Others are offered in modular units of eight, six, or four weeks, for full semester credit. Still other summer courses complete a full semester's work in the first or second half of summer session, with classes meeting twice as many hours per week. In full-year courses offered in summer, the work of the first semester is covered in the first half-session, the work of the second semester in the second half.

Classroom, dormitories, libraries, and dining halls are air conditioned. The Student Recreation Center and other athletic facilities are open in the summer. Information about the summer session is available on request from the Division of Unclassified Studies or from the registrar of each school.

May Session

In the interval of several weeks between final examinations in the spring semester and the beginning of summer session, Vanderbilt offers educational travel opportunities and a variety of "total immersion" courses that would be difficult to offer during a regular semester.

Students are permitted to take no more than one course during the May session. Housing and food services are provided during the session.

Transient students are eligible for May session courses.

Financial Information

TUITION for undergraduates for the 2000/2001 academic year is \$24,080 (\$12,040 a semester). A \$600 laboratory equipment fee is charged for students enrolled in the School of Engineering. A full-time undergraduate student takes 12 to 18 hours. Students taking more than 18 hours per semester are charged \$1,003 per hour for each extra hour. Students who, for approved reasons, enroll for fewer than 12 hours are charged \$1,003 per hour, with a minimum tuition charge of \$1,003 per semester. The \$400 deposited with the Office of Undergraduate Admissions when the student is accepted is applied to the bill for the first semester.

Rates for tuition and fees are set annually by the Board of Trust and are subject to review and change without further notice.

Estimate of Expenses

Basic expenses (excluding travel and personal expenses) should be approximately \$34,322 a year, itemized as follows:

Tuition (2000/2001)	\$24,080
Room and board (estimate)	8,328
Books and supplies (estimate)	870
Student activities and recreation fees (estimate)	632
Hospitalization insurance	412

Other Academic Fees

Application fee	\$ 50
Engineering laboratory fee (semester)	300
Late registration fee	30
Senior-in-absentia minimum semester tuition charge (hourly rate)	1,003
Special examination fee	5
Credit by departmental examination fee	50

Special charges for the use of the University computer are added to the cost for some courses.

The change period of registration extends from the second through the sixth day of classes.

Late registration fees are charged to students who should have registered by the published dates and did not. Registration dates for each school are shown in the *Schedule of Courses*.

Payment of Tuition and Fees

Tuition, fees, and all other University charges incurred prior to or at registration are due and payable by 22 August for the fall semester and 3 January for the spring semester. All charges incurred after classes begin are due and payable in full by the last day of the month in which they are billed to the student. If payment is not made within that time, cancellation of V-Net (long distance telephone) access for campus residents may result and additional charges to campus dining or flexible spending accounts may be prohibited.

Students/Guarantors will be responsible for payment of all costs, including reasonable attorney fees and collection agency fees, incurred by the University in collecting monies owed to the University. The University will assess a \$20.00 fee for any check returned by the bank and reserves the right to invoke the laws of the State of Tennessee governing bad checks.

Refunds of Tuition and Housing Charges

University policy for the refund of tuition and housing charges provides a percentage refund based on the time of withdrawal. Students who withdraw officially or who are dismissed from the University for any reason may be entitled to a partial refund in accordance with the established schedule shown below. Students who register for more than 18 hours and later reduce their registration to 18 hours or fewer may be entitled to a partial refund of the extra tuition for hours over 18 in accordance with the same schedule. Fees are nonrefundable.

Tuition Refund Insurance is offered through the Office of Student Accounts. This elective plan provides coverage for tuition and housing in the event a student withdraws from school due to medical reasons.

Fall 2000 Withdrawal/ Refund Schedule

Week 1	August 28–September 2	100%
Week 2	September 3–September 9	90%
Week 3	September 10–September 16	80%
Week 4	September 17–September 23	70%
Week 5	September 24–September 30	70%
Week 6	October 1–October 7	60%
Week 7	October 8–October 14	50%
Week 8	October 15–October 21	50%
Week 9	October 22–October 28	40%
Week 10	October 29–November 4	40%

No refund after November 4, 2000

Spring 2001 Withdrawal/ Refund Schedule

Week 1	January 8–January 13	100%
Week 2	January 14–January 20	90%
Week 3	January 21–January 27	80%
Week 4	January 28–February 3	70%
Week 5	February 4–February 10	70%
Week 6	February 11–February 17	60%
Week 7	February 18–February 24	50%
Week 8	February 25–March 3	50%
<i>Spring Break</i>	March 4–March 10	
Week 9	March 11–March 17	40%
Week 10	March 18–March 24	40%

No refund after March 24, 2001

Tuition Payment Programs

Two voluntary programs are available through Tuition Management Systems (TMS): The Vanderbilt Ten-Month Interest Free Monthly Payment Plan and the Tuition Stabilization Plan. The interest-free payment option is one of the best ways to fit education costs into a monthly budget without borrowing. The Tuition Stabilization Plan allows families to pre-pay up to four years of tuition, thereby eliminating any worry of future tuition increases. Plan details are available upon request from the Office of Student Accounts by calling (615) 322-6693 or (800) 288-1144. You may also e-mail us, student.accounts@vanderbilt.edu, or send a fax to (615) 343-8511.

Late Payment of Fees

All charges not paid by the specified due dates will be assessed a late payment fee of \$1.50 on each \$100 owed.

Financial Clearance

Students will not be permitted to attend classes for any semester if there is an unpaid balance. Transcripts (official or unofficial) will not be released until the account has been paid. Diplomas of graduating students will not be released until all indebtedness to the University is cleared.

Activities and Recreation Fees and Identification Card

All degree-seeking undergraduate students pay activities and recreation fees that entitle them to admission to certain athletic, social, and cultural events and to subscription to certain campus publications. The fees are determined annually by committees of faculty members, students, and administrators. Specific information on these fees is published annually in the *Student Handbook*. The undergraduate student's identification card will admit students to University activities and the Student Recreation Center. It

is also used as a library card and to stamp other documents. The card should be carried at all times and be returned to the University if the student withdraws for any reason.

Transcripts

Official academic transcripts are supplied by the University Registrar on written authorization from the student. Transcripts are not released for students with financial or other University holds.

Fraternity and Sorority Membership

Cost of fraternity or sorority membership averages between \$400 and \$500 per year. This does not include meals or housing.

Need-Based Financial Aid

For students who require financial assistance, three forms of need-based aid are available: scholarships/grants, loans, and jobs. Awards sometimes incorporate students' abilities and promise, with the amount of the award varying according to the financial needs of the students and their families. The amount of annual aid will be determined by a new evaluation of need, recalculated each year on the basis of updated financial information. The proportion of grant to loan and/or job generally is determined by each student's academic record. The University attempts to fill the gap between the cost of attending Vanderbilt and what students and their families can reasonably be expected to contribute.

Application Procedure

Prospective students need to complete a Free Application for Federal Student Aid (FAFSA) and a College Scholarship Service PROFILE Registration and Application. The FAFSA may be obtained from the student's high school guidance counselor or completed on-line, *www.fafsa.ed.gov*. Student may register to receive a PROFILE Application by calling the College Scholarship Service, (800) 778-6888, or student may register and complete a PROFILE Application on-line, *www.collegeboard.com*. Complete the PROFILE registration process no later than 15 January and submit the FAFSA and PROFILE Application no later than 1 February of the senior year in high school. Further information regarding the application process is available from the Office of Student Financial Aid.

Students must reapply for financial aid each year, following the same basic procedures described above. Renewal applicants must be in good standing and making satisfactory academic progress in order to continue receiving federal and state student aid funds. Renewal of University need-based assistance requires a minimum cumulative GPA of 2.25 for the sophomore year

and 2.5 for the junior and senior years. The priority consideration date for filing renewal applications is 15 April.

Financial Aid for Early Decision Applicants

Early Decision applicants seeking financial aid must complete the College Scholarship PROFILE Registration and Application. Students may register to receive a PROFILE Application by calling the College Scholarship Service, (800) 778-6888, or students may register and complete a PROFILE Application on-line, *www.collegeboard.com*. Early Decision I applicants should complete the PROFILE registration process no later than 15 October and submit the PROFILE Application no later than 1 November of the senior year in high school. Early Decision II applicants should complete the PROFILE registration process no later than 15 December and submit the PROFILE Application no later than 1 January of the senior year in high school. Students will receive an estimate of their eligibility for financial aid with their offer of admission. The student must then file the FAFSA no later than 1 February. The original estimated aid award will be confirmed or revised, as appropriate, after the FAFSA and PROFILE together are reviewed by the Office of Student Financial Aid.

Federal and State Aid

Financial aid is available from several federal and state student financial aid programs. Any citizen or permanent resident of the United States who is accepted for admission and who demonstrates financial need is eligible to participate. This aid may be renewed annually by students who continue to qualify on the basis of financial need, if they are in good academic standing and are making satisfactory academic progress in accordance with standards prescribed by the U.S. Department of Education. (See Satisfactory Academic Progress.)

The FAFSA establishes eligibility for participation in federal aid programs. The loan programs also require completion of loan applications and/or promissory notes. Applicants should contact their state agencies for information regarding state aid programs and application procedures.

Vanderbilt participates in the following federal student financial aid programs:

- Federal Pell Grant Program
- Federal Supplemental Educational Opportunity Grant Program (FSEOG)
- Federal Work-Study Program (FWSP)
- Federal Perkins Loan Program
- Federal Stafford Loan Program
- Federal Parent Loan for Undergraduate Students (PLUS)

In addition to the federal student financial aid programs, Vanderbilt administers a number of need-based institutional scholarship, grant, and loan programs, some of which are described briefly in the Scholarship section

of this catalog. University general sources of need-based assistance and loan funds available to students in all schools are listed.

Satisfactory Academic Progress for Student Financial Aid

Vanderbilt students who receive financial assistance through federal student aid programs under Title IV of the Higher Education Act (Federal Pell Grant, Federal Supplemental Educational Opportunity Grant, Federal Work-Study, Federal Perkins Loan, Federal Stafford Loan, Federal Parent Loan for Undergraduate Students, or State Incentive Grant) must maintain satisfactory academic progress in the course of study they are pursuing, in accordance with the established standards and practices of the University. These standards also normally apply to students receiving financial aid from Vanderbilt sources.

The following standards of satisfactory academic progress have been established by Vanderbilt:

1. A full-time freshman who fails to qualify for sophomore standing after two semesters will be eligible to receive federal student assistance for one additional semester only (or summer session) in order to qualify for sophomore standing. Failure to qualify for sophomore standing after completion of the additional probationary semester (or summer session) will result in the termination of federal student assistance until the academic deficiency is corrected.

2. A full-time sophomore student who fails to achieve junior standing after four semesters of equivalent full-time enrollment will be eligible to receive federal student assistance for one additional semester only (or summer session) in order to qualify for junior standing. Failure to qualify for junior standing after completion of the additional probationary semester (or summer session) will result in termination of federal student assistance until the academic deficiency is corrected.

3. A full-time junior student who fails to achieve senior standing after six semesters of equivalent full-time enrollment will be eligible to receive federal student assistance for one additional semester only (or summer session) in order to qualify for senior standing. Failure to qualify for senior standing after completion of the additional probationary semester (or summer session) will result in termination of federal student assistance until the academic deficiency is corrected.

NOTE: Since continued receipt of federal student assistance is contingent upon achieving the next higher class level within the time limits specified in the preceding paragraphs, aid recipients are cautioned that dropping courses or retaking courses to improve grade point averages may jeopardize their eligibility to receive federal student assistance.

4. When federal student aid is terminated due to unsatisfactory academic progress at any level, such aid may be reinstated for subsequent academic periods if a minimum of 12 hours with a 2.0 grade point average is earned

during the semester in which federal aid has been suspended, provided that the student has then achieved the appropriate class standing and is removed from academic probation. However, the five-year limit for receiving federal student aid, as described below, cannot be exceeded.

5. Under normal conditions, students are expected to complete the requirements for a baccalaureate degree in four years. Some students, however, fail to complete their degree requirements within the standard four-year period and need financial assistance for an additional period. It is Vanderbilt's policy that students who are allowed to continue beyond four years in pursuit of a baccalaureate degree will be eligible to continue receiving federal student assistance for not more than one additional academic year if they are considered to be in good academic standing in accordance with the standards of the school in which enrolled. No student is eligible to receive federal student assistance for more than ten semesters of equivalent full-time undergraduate study.

6. For undergraduate students who have been authorized to enroll for less than full-time status, satisfactory academic progress is determined by the Administrative Committee of the school in which the student is enrolled. For receipt of federal student assistance, students who are enrolled for less than full-time status must earn credit hours on a pro-rata basis of the full-time student requirements and maintain a minimum 2.0 cumulative grade point average.

7. In order to remain eligible for federal financial assistance, a student must complete enough hours to progress to the next grade level, as well as achieve the minimum cumulative grade point average for the school in which he or she is enrolled. In order to retain full eligibility for university need-based grant assistance, rising sophomores must maintain a cumulative grade point average of 2.25, and rising juniors and seniors must maintain a 2.5.

Appeal and Reinstatement

1. Any student whose federal assistance is terminated due to unsatisfactory academic progress may submit an appeal for reinstatement of such assistance to the Office of Student Financial Aid. If it is determined that the student's lack of academic progress is the result of illness, death in the family, or other exceptional circumstances, the University may reinstate federal student assistance.

2. Any student who is denied federal assistance due to unsatisfactory academic progress can re-establish his or her eligibility by removing the deficiency during subsequent academic periods.

3. A student who has been dropped for academic deficiency may apply for readmission after an intervening period of not less than one semester. Such students, if readmitted, will be in a probationary status for the first semester. Reinstatement of eligibility for federal student assistance, if requested, will require specific approval of the Director of Student Financial Aid. If such approval is granted, it will be for one semester only; in order to receive such assistance for subsequent semesters, the student must earn a minimum of 12

hours and a 2.0 grade point average for the first semester after being readmitted and for each semester thereafter.

Student Employment

On-Campus Jobs. Students interested in part-time on-campus employment should contact the Student Employment Office, a division of the Office of Student Financial Aid, 2309 West End Avenue, Room 324. It is the primary responsibility of the Student Employment Office to assist those students who have applied and are eligible to work under the Federal Work-Study Program. In addition, the Student Employment Office staff will assist other students with job referrals (depending upon availability) to on-campus institutional employment (non-work-study jobs).

Off-Campus Jobs. Students interested in part-time off-campus employment should inquire at the Career Center, 110 Alumni Hall, which acts as a clearinghouse for jobs offered to students by off-campus employers. Jobs off campus often are in sales or service and pay about minimum wage. Many involve a consistent schedule of Monday through Friday early evening hours, fifteen or more a week, and continue during examinations and semester interims.

The Career Center also maintains directories and some resource information about summer or interim jobs in recreation, education, community service, government, business, and industry.

University General Medals, Prizes, and Awards

THE ACCOLADE AWARD was established in 1987 to acknowledge the intent and effort of the Accolade—a formal dance to raise funds for minority scholarships. The award is presented to a rising minority senior in recognition of academic achievement and participation in extracurricular activities which contribute to the diversification of the Vanderbilt student body.

THE CHARLES FORREST ALEXANDER PRIZE IN JOURNALISM was established in 1978 in memory of Charles F. Alexander (B.A. 1950) who served as editor of the *Commodore* and *V Book* and as a staff member of the *Hustler*. It is awarded to a student who has achieved distinction in Vanderbilt student journalism.

THE GREG A. ANDREWS MEMORIAL AWARD was established in 1969 by James M. Andrews, Sr. in memory of his son, Greg, who died while a student at Vanderbilt. It is awarded to a senior majoring in civil engineering who has made the greatest academic progress and who plans graduate study in environmental and water resources engineering.

THE THOMAS G. ARNOLD PRIZE was established in 1989 by family and friends of Thomas Arnold, in recognition of his distinguished service as instructor of biophysics in medicine from 1952 until 1989. It is awarded for the best design of a biomedical engineering system or the best research project in the application of engineering to a significant problem in biomedical science.

THE MORRIS H. BERNSTEIN JR. PRIZE IN LATIN DECLAMATION was established in 1983 by William H. Bernstein (B.A. 1983) in memory of his father, Morris H. Bernstein, Jr. (B.A. 1943, M.D. 1946). It is awarded to an undergraduate who has studied two semesters of Latin

and wins the competition requiring participants to deliver from memory selected Latin passages that reflect the classical ideal.

THE GLENN AND ELIZABETH BOGITSH AWARD was established in 1989 by the parents of Glenn Carlisle Bogitsh (B.S. 1977) and Elizabeth Norris Bogitsh (B.S. 1982), who died in a 1988 plane crash. It is awarded to the student who best demonstrates a strong commitment to physical fitness and who, by example and leadership, inspires participation and honorable competition in campus recreation programs.

MARGARET BRANSCOMB PRIZE was established in 1993 by family and friends in memory of Margaret Branscomb, wife of Chancellor Emeritus Harvie Branscomb. It is awarded to a freshman judged to have the personal and musical qualities that best exemplify the spirit and standards of Blair School of Music.

THE FRANKLIN BROOKS MEMORIAL AWARD was established in 1994 by faculty, students, and friends in memory of H. Franklin Brooks, associate professor of French and three-time director of the Vanderbilt-in-France program. Additional support came from Alliance Française of Nashville and the estate of Barbara Shields Kelley (B.A. 1937). The award is given to an outstanding student enrolled in the Vanderbilt-in France program.

THE LARRY ROSS CATHEY AWARD was endowed in 1974 in memory of Larry Ross Cathey (B.A. 1966 with honors in astronomy, M.A. 1968). It is awarded to an outstanding undergraduate astronomy major.

THE COOLEY PRIZE was originally established in 1920 at the George Peabody College for Teachers as an endowed medal fund. Reinaugurated in 1996, it is presented to the graduating senior majoring in fine arts with the highest grade point average.

THE ARTHUR J. DYER, JR. MEMORIAL PRIZE was established in 1939 by Arthur J. Dyer, Sr. (B.E. 1891) in memory of his son, a former Vanderbilt student who died working on a bridge construction in 1928. The prize is awarded to a senior who performed the best work in structural steel engineering.

THE ROBERT V. DILTS AWARD was established in 1994 by the chemistry department and friends in honor of Robert V. Dilts, professor of chemistry, emeritus. It is presented to an outstanding graduating senior in analytical chemistry, with preference given to a student who plans a career in the field.

THE EDWIN S. GARDNER MEMORIAL PRIZE was established in 1980 by Grace D. Gardner (B.A. 1932) in memory of her husband, Edwin (B.A. 1927), Vanderbilt Treasurer Emeritus. It is awarded to a senior for excellence in French studies.

THE GEYER AWARD was established in 1970 by Richard A. Geyer, Jr. (B.A. 1970), to stimulate healthy journalistic competition and to help foster the belief that "the newspaper, radio, and television station (of the University) should delve into and interpret events and trends occurring within the University." The award is presented to the reporter who has most consistently prepared articles or reports based on thorough research and which have been at the same time "lively, informative, and logical."

THE MARGARET STONEWALL WOOLDRIDGE HAMBLET FELLOWSHIP was endowed in 1983 by Clement H. Hamblet and Margaret H. Sarnier, husband and daughter of Margaret Hamblet, to commemorate her love of art. She was a graduate of Peabody College in the Class of 1926. Given to a senior who shows outstanding merit in studio art, it provides for one year of travel to study art and develop creativity.

THE JEAN KELLER HEARD PRIZE was established in 1985 by the Vanderbilt Women's Club to honor violinist Jean Keller Heard, wife of Chancellor Emeritus Alexander Heard. It is awarded for excellence in musical performance to a string major seeking the bachelor of music degree.

THE WALTER GILL KIRKPATRICK PRIZE was established in 1926 with a bequest from Walter Kirkpatrick (B.E. 1886, C.E. 1887, M.S. 1889). It is awarded to the most deserving third-year student majoring in civil engineering.

THE C. MAXWELL LANCASTER MEDAL FOR EXCELLENCE IN ITALIAN was established in 1991 in memory of C. Maxwell Lancaster, professor of French and Italian at Vanderbilt from 1939 to 1976. It is awarded to a student who maintains the highest standard throughout four semesters of Italian.

THE AVERY LEISERSON AWARD was established by students to honor Avery Leiserson, professor of political science, emeritus, a member of the faculty from 1952 until his retirement in 1978. He served as chair of the department from 1952 to 1964. The award is presented annually for the best research paper or essay written by an undergraduate in a political science course.

THE THOMAS W. MARTIN AWARD was established in 1993 in memory of Thomas W. Martin, professor of chemistry from 1957 to 1991 and department chair from 1967 to 1970. It is presented to a graduating chemistry major who has excelled in physical chemistry and plans graduate study in chemistry.

THE JOHN T. MCGILL AWARD was established in 1960 by Lizzie McGill in memory of her husband, John T. McGill (B.A. 1879), who spent his life in service to Vanderbilt, first as a student and then as professor and historian of the University. The award is presented to the resident of the McGill Philosophy and Fine Arts Project who, in the eyes of fellow residents, "has established qualities of leadership, as well as being a good student of gentle bearing."

THE JOHN T. AND LIZZIE ALLEN MCGILL FRESHMAN AWARD honors Dr. and Mrs. McGill, both of whom served as friends of Vanderbilt students, providing them hospitality and guidance. It is given to two "academically accomplished freshmen of gentle bearing who show kindness and respect for all others, and who have established qualities of leadership."

THE JOHN T. AND LIZZIE ALLEN MCGILL UPPERCLASS AWARD, which is given in honor of Dr. and Mrs. McGill, is given to two upperclass students "who are academically accomplished, who have demonstrated qualities of leadership, and whose efforts have led to an increased understanding of other students' needs, and a more civil campus atmosphere."

THE HENRIETTA HICKMAN MORGAN MEMORIAL PRIZE was established in 1946 by William B. Morgan II in memory of his wife, a member of the Class of 1938. It is awarded for the best piece of original writing submitted by a member of the freshman class.

THE MERRILL MOORE AWARD was established in 1961 by Ann Leslie Nichol Moore in memory of her husband, Merrill Moore (B.A. 1924, M.D. 1928), a Fugitive poet and renowned psychiatrist. The award is presented to a junior or senior who shows literary promise.

THE NED PARKER NABERS AWARD was established by colleagues and friends in memory of classics professor Ned Parker Nabers who served on the faculty from 1966 until his death in 1984. It recognizes the best essay or research paper by an undergraduate in the fields of classical archaeology or ancient art or architecture.

THE DANA W. NANCE PRIZE FOR EXCELLENCE IN THE PRE-MEDICAL CURRICULUM was endowed in 1985 by family and friends of Dana W. Nance (B.A. 1925, M.D. 1929). It is

awarded to a student who has demonstrated perseverance to succeed in the pre-medical curriculum and who embodies the attributes of a caring physician.

ELLIOTT AND AILSA NEWMAN CLARINET AWARD was established in 1998 with a bequest from Ailsa MacKay Newman and memorial gifts from her family and friends. It is presented to a clarinet major for professional advancement.

THE AWARD FOR OUTSTANDING RESEARCH IN MOLECULAR BIOLOGY is presented to a senior for outstanding research performed in the molecular biology major program.

THE OUTSTANDING SENIOR IN CHEMISTRY AWARD is presented to the graduating senior planning graduate work in chemistry who, in the opinion of the faculty in the department, shows the most promise for an outstanding career.

THE DONALD E. PEARSON AWARD was established in 1980 by the chemistry department to honor Donald E. Pearson, professor of chemistry, emeritus, who served on the faculty from 1946 until his retirement. It is presented to a graduating senior majoring in chemistry who has been judged the most distinguished in undergraduate chemistry research.

THE ROBERT PETER PRATT MEMORIAL AWARD was established in 1991 by family, colleagues, and friends to honor Robert Peter Pratt (1954–1991), associate director of undergraduate admissions and leader in promoting student diversity. It is presented to a Chancellor's Scholar of junior or senior standing whose leadership and service exemplify Peter Pratt's commitment to diversity and unity.

THE ROB ROY PURDY AWARD was established in 1979 by the student affairs staff to honor the senior vice chancellor, emeritus. The award is presented to the upperclass student judged by the student affairs staff to have demonstrated in his or her leadership the qualities of humaneness, dedication, loyalty, and unselfish service to Vanderbilt University so exemplified by Rob Roy Purdy.

THE DAVID RABIN PRIZE was established in 1985 by family and friends in memory of David Rabin, Professor of Medicine and Professor of Obstetrics and Gynecology from 1975 to 1984. It is awarded to a Blair School of Music undergraduate for excellence in musical performance.

THE JIM ROBINS AWARD was established in 1969 by Michael G. Wagner (B.A. 1957). It is given to perpetuate the memory of James A. Robins (B.A. 1892) whose "life and teachings exemplified selfless devotion to learning, to honor, to participation in . . . sports, and to service to youth and alma mater." It is awarded to a "Vanderbilt athlete of the senior class in whose life these virtues are most evident."

THE STEIN STONE AWARD was established in 1984 by Mrs. Stone in memory of her husband, James N. "Stein" Stone, an "All Southern" center for the football team from 1904-1907. It is presented to a senior who has lettered in varsity sports and has been judged to have made the most scholastic and athletic progress.

THE HENRY LEE SWINT AWARD was established in 1976 by Frank A. Woods (B.A. 1963, L.L.B. 1966), a former student of Henry Swint, Holland N. McTyeire Professor of History who served on the faculty from 1939 until 1977. It is presented for the best history essay or research paper.

THE UNDERWOOD MEMORIAL AWARD was endowed in 1961 by the late Newton Underwood in memory of his father, Judge Emory Marvin Underwood, long-time member of the Board of Trust. The award is given to the most deserving and promising graduating senior or graduate student in physics.

THE VANDERBILT UNIVERSITY TRAVELING FELLOWSHIP is awarded to a graduating senior for a year of worldwide travel and study on a self-designed project broadly related to international concerns. The award seeks to develop a prospective leader in the nation and the world.

THE WALTER C. WATTLES FELLOWSHIP was established in 1969 by Walter C. Wattles (B.A. 1936), Atlanta, Georgia. It is awarded to three outstanding graduating senior women who will spend one year in an international insurance training program at Lloyd's of London.

THE SUSAN FORD WILTSHIRE ESSAY PRIZE is cosponsored by the Women's Studies Program and the Women's Faculty Organization. It recognizes the best undergraduate and graduate papers on topics concerning gender. Depth of research, quality of analysis, originality, and clarity of presentation are considered.

THE KATHERINE B. WOODWARD PRIZE was established in 1943 by Katherine Woodward (B.A. 1919), who taught high school Spanish from 1919 until 1956. It is awarded to a senior who demonstrates excellence in Spanish studies.

THE YOUNG ALUMNI TRUSTEE is nominated by the Alumni Association to serve on the Board of Trust. Members of the graduating class, the preceding class, and the succeeding class of the four undergraduate schools vote on a slate of three graduating seniors. Young Alumni Trustees are eligible to serve two successive two-year terms on the Board.

Scholarships and Need-Based Financial Aid

1

Honor Scholarships

Vanderbilt's highly competitive Honor Scholarship program is based on academic merit and leadership. Honor Scholarships are awarded in recognition of exceptional accomplishment and high promise in some field of intellectual endeavor. The applicant's total record is considered, with particular attention to academic performance, standardized test scores, and recommendations. For applicants to the Blair School of Music, the entrance audition is an important factor.

To be considered for Honor Scholarships, students need only complete their application for admission to the University by January 1. Honor Scholarships normally are awarded to incoming freshmen and continued for four years of undergraduate study, subject to satisfactory academic performance. Unless noted as providing full tuition, the honor scholarships offer a partial-tuition award.

Financial need is not considered in the awarding of Honor Scholarships. Students who desire need-based student financial aid should apply through regular University channels.

University General Honor Scholarships

HAROLD STIRLING VANDERBILT (HSV) HONOR SCHOLARSHIPS honor the memory of Harold Stirling Vanderbilt, great-grandson of Commodore Cornelius Vanderbilt and president of the University's Board of Trust from 1955 to 1968. One full-tuition HSV Scholarship is awarded annually in each of the following schools: Blair School of Music, the School of Engineering, and Peabody College. Nine full-tuition HSV Scholarships, which include a summer study opportunity abroad, are awarded in the College of Arts and Science.

CHANCELLOR'S SCHOLARSHIPS FOR OUTSTANDING MINORITY STUDENTS, initiated in 1985 by Chancellor Joe B. Wyatt, are funded with gifts from alumni, faculty, staff, students, corporations, and friends. These full-tuition scholarships are available to minority students from all regions. The program includes a stipend, not to exceed \$4,200, for a summer of study or a research opportunity in a Vanderbilt program, either in Nashville or abroad, after the sophomore or junior year.

THE CHRONICLERS OF DISCOVERY SCHOLARSHIP was established in 1998 for students who will pursue a course of study and a career in the communication of science, engineering, and technology. This contract interdisciplinary major can prepare students for a variety of careers, including science journalism, public health, public relations, environmental law, and technical management. A panel of judges from Vanderbilt, NASA, Discovery Communi-

cations, and the U.S. Space and Rocket Center choose one winner annually, who must also apply to the College of Arts and Science through regular admission channels. Winners receive a full tuition scholarship and a summer internship at the Discovery Channel. Applications may be obtained from the Office of Undergraduate Admissions, and must be completed by January 15.

LANIER FAMILY SCHOLARSHIPS are a part of the Chancellor's Scholarship program. Funded with gifts from the Lanier family and friends, these full-tuition scholarships are available to minority students from the Atlanta area and Georgia.

THE LANIER SCHOLARSHIP PROGRAM was established with the generous support of the Lanier family of Atlanta and Vanderbilt alumni in the greater Atlanta area. Sartain Lanier (B.A. 1931), a leader in the Atlanta business community, was a Vanderbilt Board of Trust member from 1960 until his death in 1994. Two scholarships, covering tuition and fees, are awarded annually to graduates of secondary schools in the Georgia counties of Clayton, Cobb, DeKalb, Douglas, Fulton, Gwinnett, Henry, and Rockdale. Applications can be obtained from the Office of Undergraduate Admissions.

THE INGRAM SCHOLARS PROGRAM was established in 1993 by the late E. Bronson Ingram (A 1953) and his family. Ingram, who joined the Vanderbilt University Board of Trust in 1967, was president of the Board from 1991 until his death in June 1995. In addition to academic merit, scholars are selected on the basis of a strong record of community service. Recipients design and implement projects that address significant societal needs. Awards cover half-tuition, stipends for special summer projects, and project expenses. Applications and brochures are available in the offices of Volunteer Activities, Campus Student Services, and Undergraduate Admissions. For more information call the Ingram Scholarship Program at (615) 322-3963 or write to: Ingram Scholarship Program, Office of Undergraduate Admissions, Vanderbilt University, 2305 West End Avenue, Nashville, Tennessee 37203-1727.

THE SOPHIE D. ABERLE SCHOLARSHIP was established in 1997 with a bequest from Sophie D. Aberle, Ph.D., M.D., whose distinguished career in anthropology and government service with the Bureau of Indian Affairs spanned almost seventy years. She died in 1996 at the age of 100. Awarded on the basis of academic merit, preference is given to Native Americans who are members of the Navajo Tribe or Nation.

THE CARELL SCHOLARSHIPS were established in 1998 by Monroe J. Carell, Jr. (B.E. 1959) and his wife, Ann Scott Carell, a Peabody graduate in the class of 1957. Mr. Carell is chairman of Central Parking Corporation, a Nashville philanthropist, and Vanderbilt University Board of Trust member since 1991. The full-tuition scholarships are based on academic achievement, extracurricular activities, financial need, and student employment.

THE MAGGIE S. CRAIG MEMORIAL SCHOLARSHIP, established by Cornelius A. Craig in honor of his wife, is awarded each year to an entering freshman who is a resident of Giles County and has attended school there for at least five years. The amount awarded is equivalent to full freshman-year tuition and an additional stipend to help with other educational costs, if funds allow. Awards for subsequent years will continue at the freshman-year level unless adequate funds are available to increase the awards for all Craig Scholarship recipients. Candidates are chosen by the Vanderbilt Craig Scholarship Committee and the Giles County Craig Scholarship Committee. If the scholarship is not awarded to an entering freshman, the committees may choose a Craig Scholar from among second-, third-, or fourth-year undergraduate students who meet the criteria.

THE WILLIAM D. AND VIOLET H. HUDSON HONOR SCHOLARSHIP was established in 1987 by William D. Hudson, Jr. (B.A. 1941), Thomas M. Hudson (B.A. 1942), and John H. Hudson (E 1945) to honor their parents. The award benefits students from Montgomery County, Tennessee.

THE MEMPHIS VANDERBILT HONOR SCHOLARSHIP was established in 1984 by an individual from Memphis, Tennessee. Contributions from Memphis alumni have expanded the fund, which provides an award to an entering freshman from Memphis.

THE JESSE H. JONES AND MARY GIBBS JONES SCHOLARSHIP was established in 1994 by the Houston Endowment, Inc., to honor Jesse Holman Jones (founder of the Houston Endowment and a member of the Peabody College Board of Trust from 1929 until his death in 1956) and his wife. The scholarship is awarded to talented and promising students from Houston, Texas, and the surrounding region.

NATIONAL ACHIEVEMENT SCHOLARSHIPS are awarded each year to entering freshmen who are named Finalists by the National Merit Scholarship Corporation. Recipients must not have been awarded a National Achievement Scholarship by a corporate sponsor. Finalists must list Vanderbilt University as their first choice school by the designated deadline. These scholarships are administered by the National Merit Scholarship Corporation.

NATIONAL MERIT SCHOLARSHIPS are awarded each year to entering freshmen who are named Finalists by the National Merit Scholarship Corporation. Recipients must not have been awarded a National Merit Scholarship by a corporate sponsor. Finalists must list Vanderbilt University as their first-choice school by the designated deadline. These scholarships are administered by the National Merit Scholarship Corporation.

THE DINAH SHORE SCHOLARSHIP was established in 1992 by Miss Dinah Shore (B.A. 1938). After a distinguished career in entertainment, she died in 1994.

USX FOUNDATION HONOR SCHOLARSHIPS were initiated in 1982. Awards of \$2,000 per year are available to freshmen and sophomores on a competitive basis for up to three years of study. Outstanding academic performance and leadership potential are the principal selection criteria, but financial need will be considered. Preference will be given to sons and daughters of USX employees and retirees.

THE GEORGE AND PEGGY WEISE SPIEGEL HONOR SCHOLARSHIP IN SCIENCE AND ENGINEERING was established in 1998 by George Spiegel (B.E. 1948) and his wife, Peggy (B.A. 1948), in celebration of their fiftieth class reunion. The scholarship is awarded to a student enrolled in the School of Engineering or to an Arts and Science student who is majoring in a field of science or mathematics.

College of Arts and Science Honor Scholarships

DEAN'S SELECT SCHOLARSHIPS provide 75 percent of tuition and are awarded each year to a varying number of entering freshmen.

THE ANGIE AND SAMUEL ALLEN HONOR SCHOLARSHIP was established in 1998 by Samuel E. Allen (B.A. 1958) and his wife, Angie, to celebrate his fortieth class reunion.

THE JULIA P. ARNOLD HONOR SCHOLARSHIP was established in 1983 with a bequest from Julia A. Powell Arnold (B.A. 1923, M.A. 1926).

THE FIELDING JEWELL BOLES HONOR SCHOLARSHIP was established in 1995 with a bequest from Dr. William McDonald Boles (B.A. 1931) and his wife, Eva Carol, of New Orleans, to honor his father. The full-tuition award is available to students from the Kentucky counties of Allen, Barren, Cumberland, Logan, Metcalfe, Monroe, Simpson, and Warren, with preference given to those from Barren County. Fielding Boles, a lifelong resident of Glasgow in Barren County, served as a banker to the people of this region.

THE COLLEGE CABINET HONOR SCHOLARSHIP was initiated in 1984 with gifts from members of the College Cabinet, the donor society for the College of Arts and Science. The scholarship covers the cost of tuition.

THE STEPHEN HARRIS COOK MEMORIAL FELLOWSHIP was established in 1976 by his parents as a memorial. It is awarded each year to a rising senior on the basis of need and ability, to enable the student to continue undergraduate research during the summer. The recipient is selected by the faculty of the department of chemistry.

THE DERAMUS FAMILY SCHOLARSHIP was endowed in 1998 by the Deramus Foundation, which was created by the late William N. Deramus III, former chairman of Kansas City Southern Industries and MAPCO, Inc., and his wife, the late Patricia W. Deramus. Members of the family, including Baird Deramus Fogel (B.A. 1993), Dawn Deramus Fogel (B.A. 1995), Marshall Harkless Dean III (B.A. 1999), and Jennifer Watson Dean (A 2001) are involved with the foundation, which contributes to the support of education.

THE JAYNE LOREE DRUSHAL MEMORIAL SCHOLARSHIP was established in 1968 by the Drushal family in memory of Jayne, a member of the class of 1967. The award provides assistance to a Vanderbilt student attending the Vanderbilt-in-France program, with preference given to those majoring in French. Apply by 15 April to the chair of the French department.

THE JAMES W. EDWARDS JR. SCHOLARSHIP, established in 1984 by Mr. and Mrs. James W. Edwards as a memorial for their son, is awarded annually to a Vanderbilt student attending the Vanderbilt-in-Germany program. For more information, contact the Director of the Study Abroad Program.

THE MARVIN P. FRIEDMAN SCHOLARSHIP, established in 1982 by Mr. Friedman (B.A. 1947), is available to an entering freshman from California or the West Coast. Financial need is a consideration.

THE EMMARYNE H. GENY HONOR SCHOLARSHIP was created in 1985 with a gift from Mr. Charles W. Geny (B.A. 1936), a life member of the Vanderbilt Board of Trust.

THE JOANNE FLEMING HAYES SCHOLARSHIP was established in 1993 by Joanne Fleming Hayes (B.A. 1968) in celebration of her twenty-fifth class reunion. She served as class chair for Reunion '93 and general chair for Reunion '98.

THE RICHARD G. HOLDER HONOR SCHOLARSHIP was established by the Reynolds Metals Company Foundation in 1996 to honor Richard G. Holder (B.A. 1952) for his leadership and service to the company. He retired as chairman and CEO in 1996.

THE KIRBY E. AND MARGARET A. JACKSON HONOR SCHOLARSHIP was established in 1992 with a bequest from Kirby E. Jackson, a former Vanderbilt chemistry professor. The fund honors Jackson (B.A. 1918, M.S. 1919) and his wife, Margaret Arthur, who attended Peabody College.

THE MORTON C. JOHNSON SCHOLARSHIP FUND FOR HONOR STUDENTS was established in 1987 with a bequest from Mrs. Morton C. Johnson (B.A. 1921). The award provides full tuition.

THE ERNEST A. JONES SCHOLARSHIP was established in 1985 by family, colleagues, and friends to honor Professor Emeritus Ernest A. Jones (M.S. 1943). The scholarship is awarded to an outstanding sophomore majoring in physics or physics-astronomy.

THE CHARLES WICKLIFFE KENNERLY HONOR SCHOLARSHIP was established in 1986 by family members and the Owen Cheatham Foundation. It honors the memory of Charlie Kennerly, who died midway through his freshman year at Vanderbilt. The award provides full tuition.

THE JAMES C. LANCASTER HONOR SCHOLARSHIP was established in 1982 by Mr. James C. Lancaster (B.A. 1927).

THE MR. AND MRS. T. A. LOVELACE HONOR SCHOLARSHIP, established in 1985 by Mozart Lovelace (B.A. 1929) and his wife, pays tribute to the memory of his parents, Thomas Augustus and Beulah Campbell Lovelace. The scholarship is available to a student from Weakley, Carroll, Henry, or Obion counties in Tennessee.

THE MITCHELL S. AND MADELINE L. MAGID HONOR SCHOLARSHIP was established in 1997 with a bequest from Mitchell Magid and his wife, Madeline Lightman, a member of the Class of 1939. Their daughter, Emily, is a 1975 graduate of Peabody College. Award is based on academic merit and financial need.

WILLIAM A. AND NANCY F. MCMINN HONOR SCHOLARSHIPS IN THE NATURAL SCIENCES were established in 1993 by William A. McMinn, Jr. (B.A. 1952), and his wife, Nancy, to encourage students majoring in the natural sciences, with preference for those from underrepresented groups such as women or minorities who want to study physics. These full-tuition scholarships include a summer research stipend.

THE MARTIN F. MCNAMARA JR. HONOR SCHOLARSHIP was established in 1985 by the McNamara family to honor the memory of Martin F. McNamara, Jr. (B.A. 1932, L. 1932). Preference is given to students from Kentucky.

THE COLEMAN D. OLDHAM HONOR SCHOLARSHIP was endowed with bequests from Coleman D. Oldham (B.A. 1924) and his sister, Emma C. Oldham, both of Richmond, Kentucky. It benefits students from Kentucky, with preference for those from Madison County.

THE CLAUDE AND VINCENETTE PICHOS SCHOLARSHIP IN FRENCH LITERATURE was established in 1984 by Claude Pichois, Distinguished Professor of French, and his wife, Vincenette. The scholarship supports graduate and undergraduate study of French and may include awards to junior or senior French majors who are participating in the Vanderbilt-in-France program in Aix. For more information, contact the chair of the French department.

THE PUGH-HERNANDEZ SCHOLARSHIP was established in 1980 by Mr. Robert D. Pugh to honor his daughter and son-in-law. An award is made annually to a student attending the Vanderbilt-in-Spain program. For more information, contact the Director of the Study Abroad Program.

THE RUTH AND G. A. PURYEAR HONOR SCHOLARSHIPS were established in 1994 with a bequest from Ruth Burr Puryear (B.A. 1928), who died in 1993. The scholarships honor Mrs. Puryear and her husband, a graduate in the class of 1928.

THE NORFLEET H. RAND HONOR SCHOLARSHIP was established in 1985 with a bequest from Mr. Rand (B.A. 1934), a member of the Vanderbilt Board of Trust from 1966 to 1978.

THE JAMES C. AND LISTON ROBERTS HONOR SCHOLARSHIP was established in 1982 by Mr. James C. Roberts (B.A. 1934) and his son, J. Liston Roberts (B.A. 1965).

THE RUSSELL LEE RUA HONOR SCHOLARSHIP was established in 1983 by Mr. and Mrs. Ernest Rua in memory of their son, Russell (B.A. 1978). The award provides full tuition.

THE FRED RUSSELL-GRANTLAND RICE SCHOLARSHIP FOR SPORTS JOURNALISM (established in 1956 as the Thoroughbred Racing Association-Grantland Rice Memorial Scholarship) was renamed after it was endowed in 1986 by Charles J. Cella as a tribute to Fred Russell (B.A. 1927) and Grantland Rice (B.A. 1901), two of America's most distinguished

sports writers. The award is available to an entering freshman who plans a career in sports journalism. Applications may be obtained from the Office of Undergraduate Admissions.

THE CLIFTON AND RENEE PRICE SMITH HONOR SCHOLARSHIP was established in 1983 by Dr. and Mrs. Smith, both graduates in the class of 1965. The award provides full tuition.

THE STRAYHORN HONOR SCHOLARSHIP was endowed in 1986 by Mrs. Elizabeth Strayhorn Walsh (B.A. 1924) in memory of her father, William David Strayhorn (B.A. 1897), and her three brothers: William D. Strayhorn, Jr. (B.A. 1925, M.D. 1928), Joseph M. Strayhorn (B.A. 1930, M.D. 1933), and Eugene H. Strayhorn (B.A. 1935, J.D. 1938).

THE BARBARA AND FREDERICK R. SUITS HONOR SCHOLARSHIP was created in 1986 with a bequest from Barbara Suits in memory of her husband, Frederick (B.A. 1937).

THE CATHY AND BILL TURNER SCHOLARSHIP was established in 2000 by William E. Turner, Jr. (B.A. 1954) and his wife, Cathy Wilson Turner.

THE EUGENE H. VAUGHAN JR. SCHOLARSHIP was established in 1993 by Eugene H. Vaughan, Jr. (B.A. 1955), and his wife, Susan Westbrook Vaughan, of Houston. He has served on the Vanderbilt University Board of Trust since 1972. In 1994, he received the Flowers-Underwood Distinguished Alumnus Award for dedication and service to Vanderbilt and Houston.

THE EUGENE H. VAUGHAN JR. UNDERGRADUATE RESEARCH ASSISTANTSHIP IN GEOLOGY was endowed in 1999 by Mr. and Mrs. Ernest J. Cockrell to honor Eugene H. Vaughan Jr. (B.A. 1955), a member of the Vanderbilt University Board of Trust since 1972. It is awarded to geology majors who demonstrate exceptional potential and motivation for conducting high quality research. Financial need is a consideration. Inquiries should be directed to the chair of the Department of Geology.

JESSE WILLS HONOR SCHOLARSHIPS were established in 1985 by the Wills family to honor the memory of Jesse Ely Wills (B.A. 1922), one of Vanderbilt's "Fugitive" poets. He was a life member of the Vanderbilt Board of Trust and, for ten years, chairman of the board of the Joint University Libraries. These full-tuition scholarships include a summer stipend.

THE GEORGIA WILSON HONOR SCHOLARSHIP was established in 1982 by John W. Wilson as a memorial to his wife, who graduated from Vanderbilt in 1928.

Blair School of Music Honor Scholarships

BLAIR DEAN'S HONOR SCHOLARSHIPS are awarded each year to selected students entering the Blair School. The annual stipend provides partial tuition.

THE FRANCES HAMPTON CURREY MUSIC SCHOLARSHIP was established in 1987 in memory of Mrs. Frances H. Currey by members of her family: Mr. Brownlee O. Currey, Jr. (B.A. 1949), and Mrs. Currey, and Mrs. Jesse Henley. The award provides full tuition.

THE PETER AND LOIS FYFE SCHOLARSHIP was established in 1984 to provide tuition aid for students in the precollegiate program. In 1995, the Fyfes designated the scholarship to benefit undergraduates. Peter Fyfe joined the Blair faculty in 1964 as adjunct professor of organ and serves as the University organist.

THE LAURA KEMP GOAD HONOR SCHOLARSHIP was established in 1987 to honor Laura Kemp Goad by members of her family: Mr. Cal Turner, Sr. (E 1937), and Mrs. Turner; Mr. Cal Turner, Jr. (B.A. 1962), and Mrs. Turner; and Mr. Steve Turner (B.A. 1969) and Mrs. Turner. Preference is given to a student majoring in piano. The award provides full tuition.

THE WILLIAM W. AND SAIDEE L. JARRELL SCHOLARSHIP was established in 1996 with a bequest from Anne J. Segars (A 1929) to honor her parents. She was Georgia's first female state commissioner. Her mother, a 1904 *magna cum laude* graduate, was an avid social crusader. Her father received a Vanderbilt medical degree in 1901 and practiced medicine in Thomasville.

THE RAE S. MILLER PIANO SCHOLARSHIP was established in 1987 by Martin and Enid Katahn to honor Mrs. Katahn's mother, Rae S. Miller. The \$5,000 award is given to a piano major.

THE WILDA AND WILLIAM MOENNIG SCHOLARSHIP was established in 1987 in memory of Blair's distinguished master luthier by his wife, Wilda Tinsley Moennig. The \$12,000 annual award is given to a string major.

THE KENNETH L. AND ANNE FOSTER ROBERTS SCHOLARSHIP was endowed in 1993 by Kenneth L. Roberts (B.A. 1954, J.D. 1959) and his wife, Anne Foster (B.A. 1955). Financial need is a consideration in selecting recipients.

THE DEL SAWYER TRUMPET SCHOLARSHIP was established in 1993 by the Justin and Valere Potter Foundation to honor the service of John F. "Del" Sawyer, founding Director of Blair Academy in 1964 and Dean of the Blair School of Music from 1984 until 1993.

THE WILMA WARD SCHOLARSHIP was inspired by Anne Potter Wilson's legacy of service and generosity to the Blair School of Music. Established in 1995 by Wilma Ward, the scholarship provides four half-tuition awards for four years of study.

School of Engineering Honor Scholarships

THE HOWELL ELLIOTT ADAMS SR. MEMORIAL SCHOLARSHIP was established in 1968 by Howell E. Adams, Jr. (B.E. 1953), his brother Thomas E. Adams (B.E. 1958), and his sister, Mrs. Dabney Hart (M.A. 1949), in memory of their father, Howell Adams (E 1916).

THE CHARLES K. BRUCE SCHOLARSHIP was established in 1972 under the will of Allenda Webb Bruce as a memorial to her husband, an engineering alumnus and Founder's Medalist in the class of 1912.

THE ALEX J. BULLINGTON MEMORIAL SCHOLARSHIP was established in 1995 to honor the memory of Alex J. Bullington (B.E. 1993, *cum laude*) who died in a 1995 automobile accident. The endowment was funded by gifts from the family and friends of both Alex and his grandfather, John M. Swalm, Jr., who had planned to create the scholarship, but also died in 1995, before he could do so.

THE ALETHA AND THAD DORSEY SCHOLARSHIP was endowed in 1992 with a bequest from Thad L. Dorsey (B.E. 1925).

THE EL PASO ENERGY SCHOLARSHIP, formerly the Sonat Foundation Engineering Scholarship, was endowed in 1979 by the Sonat Foundation. Sonat Inc. was acquired by El Paso Energy in 1999. The renamed scholarship is awarded to deserving juniors or seniors who are majoring in mechanical, civil, and electrical engineering and is renewable contingent upon continued qualification.

THE EL PASO ENERGY DIVERSITY SCHOLARSHIP, formerly the Sonat Foundation Diversity Engineering Scholarship, was endowed in 1994 by the Sonat Foundation. Sonat Inc. was acquired by El Paso Energy in 1999. The renamed scholarship is awarded to deserving minority students who are juniors or seniors majoring in mechanical, civil, or electrical engineering.

THE ENGINEERING MINORITY SCHOLARSHIP was established in 1976 with gifts from E. I. du Pont de Nemours & Company and the Gulf Oil Foundation.

THE JAMES GEDDES SCHOLARSHIP was established in 1975 by James Geddes Stahlman (B.A. 1919), a member of the Vanderbilt University Board of Trust from 1930 until his death in 1976, to honor his grandfather, who was for sixty-three years a location and design engineer for the Louisville and Nashville Railroad. The scholarship is awarded to students from the six states (Alabama, Florida, Kentucky, Louisiana, Mississippi, and Tennessee) originally traversed by the railroad.

PAUL HARRAWOOD HONORS UNDERGRADUATE SCHOLARSHIPS were established in 1986 by the late Professor Emeritus J. Dillard Jacobs, Jr. (Founder's Medalist, B.E. 1932), in recognition of the nineteen years of outstanding leadership given by Dean Paul Harrawood to the School of Engineering. Harrawood was dean from 1979 to 1986 and associate dean prior to that time. He joined the faculty in 1967. The award provides full tuition.

INTERNATIONAL PAPER COMPANY FOUNDATION SCHOLARSHIPS IN HONOR OF J. STANFORD SMITH were initiated in 1988 to assist top students in the fields of chemical, mechanical, or electrical engineering. The fund honors Mr. Smith, retired chairman of the company.

THE DILLARD JACOBS SCHOLARSHIP was established in 1974 by the late Professor Emeritus J. Dillard Jacobs, Jr. (Founder's Medalist, B.E. 1932), who taught mechanical engineering from 1947 until his retirement in 1976. Preference is given to former students of Presbyterian College in South Carolina or children of current faculty members of that institution.

THE CLAYTON KINCAID MEMORIAL SCHOLARSHIP was established in 1982 with a bequest from Mr. Kincaid.

THE FRED J. LEWIS SOCIETY SCHOLARSHIP was established in 1996 with contributions from Lewis Society members, including a gift from Edmund C. Rogers (B.E. 1929), who died in 1996, and a gift from Mrs. Helen P. Glimpse in honor of her son, Steven B. Glimpse (B.E. 1969). The Fred J. Lewis Society is a donor society honoring Fred Justin Lewis, who served as dean of the School of Engineering from 1933 to 1959.

THE RICHARD E. MARTIN SCHOLARSHIP was established in 1995 through the trust of Clara Ree Martin Brent (P.B.S. 1955, M.A.L. 1962) to honor the memory of her father. He was a close friend of Professor William H. Rowan, Sr. (B.E. 1926), who taught in the School of Engineering for twenty-six years.

THE MCCLESKEY HONOR SCHOLARSHIP was endowed in 1998 by Samuel W. McCleskey (B.E. 1951). He attended Vanderbilt on a scholarship. This scholarship benefits well-rounded individuals who clearly demonstrate broad-based interests.

THE ROBERT H. MCNEILLY MEMORIAL SCHOLARSHIP, established in 1981 by Edwin L. White (E 1920), honors the late Professor McNeilly, a member of the engineering faculty from 1908 until his death in 1925. Preference is given to students at the sophomore level or higher who work part time to finance their education.

THE WILSON L. AND NELLIE PYLE MISER SCHOLARSHIP FUND was established in 1965 by Professor Miser, who taught mathematics to engineers from 1925 until his retirement in 1952. The fund provides an award to a student studying engineering or applied mathematics.

THE GEORGE W. F. MYERS SCHOLARSHIP was endowed in 1991 with a bequest from George Myers, an engineer from St. Louis, Missouri.

THE DANIEL ROBINSON MEMORIAL SCHOLARSHIP was endowed in 1996 with contributions from Andersen Consulting and from the Robinson family and their friends to honor the memory of Daniel Burwell Robinson (B.E. 1994) who died in 1995. He was an analyst at Andersen Consulting of Nashville. The scholarship benefits juniors or seniors who are interested in business technology and who are majoring in computer science, engineering science, civil engineering, electrical engineering, or mechanical engineering.

THE BENJAMIN DAVID SCHULMAN SCHOLARSHIP was initiated in 1998 by Benjamin David Schulman (B.E. 1938) on the occasion of the 60th anniversary of his graduation.

THE W. D. SEYFRIED HONOR SCHOLARSHIP was established in 1986 by W. D. Seyfried (B.E. 1938).

THE A. MAX AND SUSAN S. SOUBY SCHOLARSHIP was established in 1976 by Armand Max Souby, Jr. (B.E. 1938) to honor his parents. The fund provides an award for a student majoring in chemical engineering.

JAMES WILLIAM STEWART JR. HONOR SCHOLARSHIPS were established in 1978 by James W. Stewart (B.E. 1949) and his wife in memory of their son, Jim, Jr. (B.E. 1973). The award provides tuition at the freshman-year tuition level.

THE LADY JEAN BARKER TATUM HONOR SCHOLARSHIP was established in 1988 by Joseph F. Tatum, Sr. (B.E. 1945) to honor the memory of his late wife, Lady Jean Tatum (B.A. 1946).

THE KAREN TODD SCHOLARSHIP was established in 1982 by the parents of Karen Dawn Todd (B.S. 1980) to honor their daughter, who was a Stewart Scholar.

THE COLONEL CHARLES M. AND LOUISE D. TURNER SCHOLARSHIP was endowed in 1992 with a bequest from Charles Turner (B.E. 1925, M.E. 1931).

OTHER HONOR SCHOLARSHIPS IN ENGINEERING, providing from \$1,000 to full tuition, are offered in limited number each year.

Peabody College Honor Scholarships

DEAN'S SELECT SCHOLARSHIPS provide 75 percent of tuition and are awarded each year to a varying number of entering freshmen.

THE JOEL C. GORDON HONOR SCHOLARSHIP was endowed in 1998 by William J. Hamburg, CEO of MediSphere Health Partners, to honor his friend and mentor, Joel D. Gordon, CEO of SCA Management Company, Inc. The scholarship benefits a junior or senior who is majoring in human and organizational development with a focus on healthcare business or services. Preference is given to students who are participating in a health-care related internship. Financial need is a consideration. Inquiries should be addressed to the director of the Human and Organizational Development program.

THE JOE H. HOLMES AND KATHERINE ABERNATHY HOLMES SCHOLARSHIP was endowed in 1982 with a bequest from Katherine Butler Abernathy Holmes (Peabody B.S. 1922), who taught at Women's College in Valdosta, Georgia.

THE MITCHELL S. AND MADELINE L. MAGID HONOR SCHOLARSHIP was established in 1997 with a bequest from Mitchell Magid and his wife, Madeline Lightman, a member of the Class of 1939. Their daughter, Emily, is a 1975 graduate of Peabody College. Award is based on academic merit and financial need.

THE J. RIDLEY MITCHELL MEMORIAL SCHOLARSHIP was established in 1987 with a bequest from Olivia Hague Mitchell to honor the memory of her husband, John Ridley Mitchell, a Peabody Class of 1896 graduate. A native of Crossville, Tennessee, and a 1904 graduate of Cumberland University Law School, he was a 4th district congressman from 1931 to 1941. He also served for many years as an assistant to the U.S. attorney general. He retired in 1953 and died in 1962. Mrs. Mitchell died in 1985.

THE JERE PHILLIPS HONOR SCHOLARSHIP was established in 1994 by Alton W. Phillips (B.A. 1957), Keith Phillips, and Warren Phillips to honor Jere Phillips (P.B.S. 1958), wife and mother. A tribute to Mrs. Phillips' contributions to the advancement of Peabody College, the scholarship is awarded to a rising senior who demonstrates academic merit and extraordinary qualities of leadership and community service.

THE REEVES HONOR SCHOLARSHIP was established in 1991 by the Reeves Foundation to honor Katherine Mercer Reeves (P.B.S. 1992, P.M.Ed. 1993). The scholarship is awarded to students majoring in early childhood or elementary education.

JOHN E. WINDROW HONOR SCHOLARSHIPS were established in 1982 by Dr. Arthur A. Smith (P.M.A. 1929, V.Ph.D. 1933) in memory of John E. Windrow, who devoted sixty years to Peabody College as archivist and historian. These full-tuition scholarships are available to students majoring in education.

Need-Based Financial Aid

For students who require financial assistance, three forms of need-based aid are available: scholarships/grants, loans, and jobs. Awards sometimes incorporate students' abilities and promise, with the amount of the award varying according to the financial needs of the students and their families. The amount of annual aid will be determined by a new evaluation of need, recalculated each year on the basis of updated financial information. The proportion of grant to loan and/or job generally is determined by each student's academic record. The University attempts to fill the gap between the cost of attending Vanderbilt and what students and their families can reasonably be expected to contribute.

University General Sources of Need-Based Assistance

THE UNIVERSITY NEED-BASED GRANT PROGRAM, funded by the undergraduate schools, makes grants available to applicants who need assistance to enroll or continue their study at Vanderbilt. These grants are based on financial need and academic performance. Students must apply each year as described under Application Procedure.

THE ALUMNI ASSOCIATION SCHOLARSHIP, initiated in 1977, is an endowed scholarship supported by gifts from the Alumni Association.

THE ENOCH BROWN SCHOLARSHIP FUND was established in 1963 by Elizabeth Eggleston Brown in memory of her husband, Enoch Brown, Jr. (B.A. 1914, L 1916), noted publisher and Vanderbilt trustee. Preference is given to applicants from Williamson and Shelby counties in Tennessee.

THE INNIS AND MARGUERITE BROWN MEMORIAL SCHOLARSHIP was established in 1974 by the will of Marguerite S. Brown to honor the memory of her husband, William Innis

Brown (B.A.1906). Preference is given to students who combine the fields of athletics and journalism. Recipients are encouraged, but not required, to repay the amount of scholarship assistance received.

THE CARTMELL SCHOLARSHIP was established in 1876 by the will of W. M. Cartmell. This scholarship is unique in that the recipient must be elected by the voters of the City of Lebanon, Tennessee, during regular municipal elections held every two years. The recipient must be a resident of Wilson County or Lebanon, Tennessee, and meet certain other requirements specified in the will. Further information is available in the Office of Student Financial Aid.

THE NORA C. CHAFFIN SCHOLARSHIP FUND was established in 1956 by the Women's Student Government Association to honor Miss Chaffin, who was the dean of women at Vanderbilt for twelve years. Recipients are chosen from the junior class by a selection committee. The award is based on service to the University in the areas of student government and the arts, and religious, literary, and scholastic activities.

THE DUNCAN SCHOOL MEMORIAL SCHOLARSHIP was established in 1965 by the Duncan School Memorial Foundation to provide scholarship assistance to male graduates of Nashville or Davidson County high schools.

THE FELIX SCHOLARSHIP was established in 1967 by Charles B. Kniskern, Jr. (B.A.1941), in memory of his maternal grandfather, Frank L. Felix, and his uncle, Douglas E. Felix. Recipients are encouraged to repay the amount received.

THE BERNARD FENSTERWALD MEMORIAL FUND was established in 1951 by Mrs. Fensterwald (Blanche Lindauer) in memory of her husband, a graduate of the class of 1911 and a member of the Vanderbilt Board of Trust.

THE FREEMAN-STRINGER MEMORIAL SCHOLARSHIP was established in 1965 by Mrs. William K. Stringer (Nancy Freeman) as a memorial to her father, Judge Robert Wesley Freeman (B.S. 1879), and to her deceased son, William Kenneth Stringer, Jr. (B.A.1932).

THE CHARLES V. HARRIS SCHOLARSHIP was endowed in 1993 with a bequest from Charles V. Harris, formerly of Jackson, Tennessee. His will also established scholarships at Lambuth College and Union University in Jackson. Preference is given to students from Madison County and other West Tennessee counties outside of Shelby County.

THE HASSELL SCHOLARSHIP was established in 1995 through a trust given by Thomas Frank Hassell, a member of the class of 1920. He died in 1988. Preference is given to students from Decatur, Hardin, Lawrence, Lewis, McNairy, Perry, and Wayne counties in Tennessee.

THE FRANK K. HOUSTON SCHOLARSHIP was established in 1974 with a bequest from Frank Houston (B.A.1904). He was a member of the Vanderbilt Board of Trust from 1937 until his death in 1973. Preference is given to students from the counties of Bedford, Cannon, Coffee, DeKalb, Lincoln, Marshall, Moore, Rutherford, and Wilson in Tennessee.

THE PAUL E. HUSSEY SCHOLARSHIP was established in 1961 with a bequest from Paul Hussey (B.A.1917). Preference is given to students residing in Montgomery County, Tennessee.

THE I. LEONARD JAMES SCHOLARSHIP was established in 1968 with a bequest from Mrs. James (Eva Valodin) in memory of her husband, Isaac Leonard James (Pharmacy 1904).

THE JOHN W. AND ANN JOHNSON SCHOLARSHIP was established in 1978 by Mr. and Mrs. Willard M. Johnson to honor their son and daughter-in-law, both Vanderbilt graduates.

Preference is given to students from Fentress, Morgan, Scott, Cumberland, Roane, Overton, and Pickett counties in Tennessee.

THE LEOPOLD AND PAULINE KAUFMAN SCHOLARSHIP was initiated in 1938 by E. R. Kaufman (B.A. 1909) and his sister Bessie Kaufman Mayer to honor their parents. It was annually funded by their descendants until it was endowed in 1995 by Mrs. Mayer's grandson, Ivan Mayer (B.E. 1936). The scholarship is available to students from Louisiana who are enrolled in the College of Arts and Science or the School of Engineering.

THE KEITH-GLASGOW SCHOLARSHIP was established in 1966 with a bequest from Mrs. Samuella Keith Glasgow in memory of her father, Samuel Keith, and her husband, Dr. Samuel McPheeters Glasgow.

THE ISABEL AND ALFRED W. LASHER SCHOLARSHIP was established in 1968 by Alfred W. Lasher, Jr. (A 1942), in memory of his parents. The scholarship is awarded to students from (1) Houston, (2) Harris County, (3) the state of Texas, in that order of preference.

THE DR. J. OWSLEY MANIER SCHOLARSHIP was established in 1955 to honor the memory of Dr. Manier (B.A.1907), professor emeritus of clinical medicine at the Vanderbilt School of Medicine. First preference is given to students from Giles County, Tennessee, with second preference to residents of other Middle Tennessee counties.

THE ALLEN AND RUTH MCGILL SCHOLARSHIP was established by Allen L. McGill (B.A.1916) and Ruth Conklin McGill. Mr. McGill's father, Dr. John T. McGill (B.A.1879, Ph.D. 1881), was professor emeritus of chemistry and dean of the School of Pharmacy. The scholarship is available to students enrolled in the College of Arts and Science or the School of Engineering.

THE MCNICHOLS-OWEN VANDERBILT SCHOLARSHIP was established in 1983 by the will of Mable McNichols Owen in memory of members of her mother's family, many of whom attended Vanderbilt.

THE DOROTHY L. MINNICH MEMORIAL SCHOLARSHIP honors the memory of Dorothy L. Minnich, who was associate dean for student services at the time of her death in 1974.

THE THOMAS E. MITCHELL SCHOLARSHIP, established with a bequest in 1931, is awarded to residents of the state of Georgia.

THE ELISE WALLACE MOORE SCHOLARSHIP was endowed in 1998 with a bequest from Sara Walker Moore in memory of her sister, Elise (B.A. 1923). Their mother, Fannie Goodlet Moore, a graduate in the class of 1893, was one of the first women to attend Vanderbilt.

THE JAMES ELMO OVERALL SCHOLARSHIP was established in 1966 by Dr. Nadine Webb Overall (B.A.1915, M.A. 1925) and her brother, John R. Overall (E 1923), in memory of their oldest brother, James Elmo (B.A.1913, M.A. 1914).

THE PARENTS' SCHOLARSHIP was endowed in 1976 and continues to be enlarged with gifts from parents in appreciation for the scholarships received by their sons and daughters when they were students at Vanderbilt.

THE WILLIAM H. AND HAMILTON PARKS SCHOLARSHIP was established in 1979 with gifts from William H. Parks (A 1907) and his son, Hamilton (A 1945). The scholarship is available to graduates of Dyer County High School in Newbern, Tennessee. Recipients are chosen on the basis of academic qualification and financial need.

THE ALFRED S. AND EVELYN L. PRICE MEMORIAL SCHOLARSHIP was established in 1985 through a bequest from Evelyn Lipscomb Price. Preference is given to qualified students from Trousdale County, Tennessee.

THE RILEY SCHOLARSHIP was established in 1980 by Harris D. Riley (B.A. 1945, M.D. 1948) and members of the Riley family, many of whom attended Vanderbilt.

THE JAMES A. ROBINS MEMORIAL SCHOLARSHIP was established in 1961 in memory of "Dr. Jim," dedicated student, alumnus, trustee, and faculty member of Vanderbilt.

THE BRITT ROGERS JR. MEMORIAL SCHOLARSHIP was established in 1972 by family and friends as a tribute to Brittain Allen Rogers, Jr. (A 1930, LL.B. 1931). This scholarship is awarded to students from Tupelo, Mississippi, or northeastern Mississippi, in that order.

THE CLYDE H. SHARP SCHOLARSHIP was established in 1983 with a bequest from Mrs. Sharp (Ivy Simpson) in memory of her husband, Clyde (A 1911), and their son, Clyde, Jr. (A 1936). The fund provides financial assistance to students from West Tennessee.

THE ELI GOULD AND SUE JONES SHERMAN MEMORIAL SCHOLARSHIP was established in 1963 with a bequest from Frances Sherman in memory of her parents.

THE SHIMONEK FOUNDATION SCHOLARSHIP was established in 1968 through a private trust from Frank and Joseph Shimonek. Income from the trust is equally divided among Beloit College, Lawrence University, University of the Pacific, and Vanderbilt University.

THE ADA BELL STAPLETON-BLANCHE HENRY WEAVER SCHOLARSHIP, originally the Ada Bell Stapleton Scholarship, was renamed in 1995. The fund honors Miss Stapleton, the first dean of women, and Mrs. Weaver, who served as dean of women, assistant professor of history, director of the Master of Arts in Teaching Program, and assistant dean of the Graduate School. Funded by the Vanderbilt Woman's Club, the award is given to a rising junior or senior who is "an outstanding citizen on campus."

THE LERA STEVENS MEMORIAL SCHOLARSHIP was endowed in 1974 through the will of Lera Stevens (B.A. 1933, L 1935) who was employed by Vanderbilt in the offices of the chancellor, vice-chancellor, and alumni secretary from her student years until her death in 1971.

ELDON STEVENSON SCHOLARSHIPS were established in 1987 with a bequest from Sarah and Eldon Stevenson. Mr. Stevenson (B.A. 1914) spent his entire business career with the National Life and Accident Insurance Company. He served the University as a member of the Board of Trust for thirty-five years until his death in 1972. These scholarships are available to the sons and daughters of employees of the American General Life and Accident Insurance Company.

THE D. W. STUBBLEFIELD SCHOLARSHIP, established in 1960 by D. W. Stubblefield (B.S. 1911), is available to residents of West Virginia who rank in the top 25 percent of their graduating class and are outstanding in an extracurricular activity. First preference is given to students from Kanawha County.

THE I. B. TIGRETT-E. E. WILSON SCHOLARSHIP was established in 1954 by Elmer Edwin Wilson (B.A. 1921, LL.B. 1924). Preference is given to residents of Davidson and Madison counties in Tennessee.

THE HILL TURNER SCHOLARSHIP was established in 1970 by John Turner (B.E. 1932) in memory of his uncle, Hill Turner (B.A. 1917), who was the Vanderbilt alumni secretary for many years.

THE UNDERGRADUATE SCHOLARSHIP FUND FOR UNIVERSITY GENERAL was established in 1993 with gifts from several donors.

GERTRUDE VANDERBILT MINORITY SCHOLARSHIP utilizes the endowment income from \$1 million of the estate of Gertrude C. Vanderbilt to provide scholarships for minority undergraduate students. Approval for the allocation of these funds to increase undergraduate minority student enrollment was voted by the executive committee of the Board of Trust in February 1979.

THE C. F. WALL SCHOLARSHIP was established in 1925 through the will of Mr. C. Flem Wall. It is awarded to students from Middle Tennessee, with preference being given to residents of Williamson County.

THE CHARLES S. WATSON MINORITY SCHOLARSHIP was established in 1977 by Charles S. Watson (Ph.D. 1966) to provide financial assistance for minority students.

THE NEWTON H. WHITE SCHOLARSHIP was established in 1958 by Newton H. White Jr. to honor the memory of his father. Preference is given to students from Giles County.

THE C. W. WHITTHORNE SCHOLARSHIP was established in 1873 by Congressman Whitthorne from Middle Tennessee. Recipients are nominated by the County Executive of Maury County, Tennessee.

THE JOHN MILFORD WILLIAMS SCHOLARSHIP was established by former students of Galloway Woman's College, Searcy, Arkansas, in memory of Professor J. M. Williams, president of Galloway from 1907 to 1933 and an alumnus of Vanderbilt. The recipient must be a direct or collateral descendant of a former student of Galloway Woman's College. He or she may be enrolled in either undergraduate or graduate study in any school of the University. Inquiries should be directed to the Office of Student Financial Aid.

THE ELLEN ROSS WILSON SCHOLARSHIP was established in 1963 by Joseph E. Wilson, who served as Vanderbilt University Auditor. The scholarship is available to students enrolled in the College of Arts and Science or the School of Engineering.

THE L. S. WOOD SCHOLARSHIP was established in 1967 with a bequest from Leighton S. Wood (B.E. 1932).

THE YOUNG MEMORIAL SCHOLARSHIP was established in 1958 by Logan C. B. Young (A 1930, LL.B. 1932) in memory of his two brothers, Joe Clay Young (A 1927, LL.B. 1929) and Andrew Welbey Young (B.A. 1923, LL.B. 1925). Preference is given to students residing in the First Congressional District of Arkansas.

Loan Funds Available to Students in All Schools

The FAFSA and the PROFILE are used to determine borrowing eligibility.

THE FEDERAL PERKINS LOAN PROGRAM enables the University to provide low interest loans to students. Beginning nine months after a borrower ceases to be enrolled on at least a half-time basis, the Perkins loan is repayable within a period of ten years at 5 percent simple interest. Interest does not accrue while a borrower is enrolled in school or during the nine-month grace period.

THE VANDERBILT AID SOCIETY LOAN FUND, raised by yearly contributions of members of the Vanderbilt Aid Society, makes about \$40,000 available for new loans each year. Loans are repayable at 7 percent simple interest over a six-year period following departure from Vanderbilt. Interest does not accrue while the borrower is enrolled at Vanderbilt.

THE FEDERAL STAFFORD LOAN PROGRAM provides loans through banks and other commercial lenders for up to \$2,625 for the first year, \$3,500 for the second year, and \$5,500 for

each subsequent undergraduate year, with liberal terms including deferment of repayment while one is enrolled as at least a half-time student. Need-based eligibility must be established for the subsidized Stafford Loan, whereas need-based eligibility is not required for the unsubsidized Stafford Loan. However, the aid application materials must be completed for both loan types in order to determine total eligibility.

THE VANDERBILT UNIVERSITY UNDERGRADUATE EDUCATION LOAN PROGRAM provides loans to assist students beyond existing federal and other student loan programs. The interest rate is variable and loans are repayable within a period of ten to twenty years (depending upon the amount borrowed). Repayment begins immediately following graduation or less than half-time enrollment status at Vanderbilt.

College of Arts and Science Scholarships

THE ABELL FAMILY SCHOLARSHIP was established in 1992 by Hughes Abell (B.A.1972), along with his parents and family, as a tribute to the teachers of the Monroe City Schools and Vanderbilt University, especially Walter Dunn (Lee Junior High School), Eleanor "Nibby" Thompson (Neville High School), and V. Jacque Voegeli (Vanderbilt). Preference is given to students from Monroe/Ouachita Parish; northeastern Louisiana; and Louisiana, in that order.

THE SARAH OVERTON COLTON BARRY SCHOLARSHIP was established in 1939 by Robert P. Barry, Jr. (B.E. 1933, M.S. 1934), in memory of his wife, Sarah.

THE EULEEN BROWN BERRY SCHOLARSHIP was endowed in 1990 through the bequest of Euleen Berry (B.A.1923), a former teacher in Tennessee and Arkansas.

THE BOURLAY-HAMBRICK SCHOLARSHIP was endowed in 1999 by retired Divinity School professor emeritus Charles H. Hambrick (B.A. 1952) and his wife, Joy Bourlay Hambrick, to aid students of Asian-American heritage. They have lived and taught in Japan.

THE J. M. BRECKENRIDGE MEMORIAL CHEMISTRY SCHOLARSHIP was established in 1965 by Mrs. Breckenridge in memory of her husband. He was a member of the Vanderbilt faculty for thirty years and was at one time chair of the chemistry department. Recipients of Breckenridge scholarships will be chosen from juniors and seniors who plan careers in chemistry.

THE MATT AND VIOLA CARLOSS SCHOLARSHIP was established in 1978 by John Raymond "Matt" Carloss, who was originally from Lebanon, Tennessee, and his wife, Viola, born in Brownsville, Tennessee. Both were graduates in the class of 1936. They died in 1993. Preference is given to students from Wilson and Haywood counties in Tennessee.

THE MARY AND ELMER COHEN SCHOLARSHIP was endowed in 1998 with a bequest from Elmer Cohen (B.A. 1931).

THE MICHELE AND STACIA CONLON SCHOLARSHIP was endowed in 1994 by Mr. and Mrs. Michael W. Conlon to honor their daughters, Michele (B.A. 1994) and Stacia (B.A. 1997).

THE COUSINS SCHOLARSHIP was established in 1982 by Mr. and Mrs. R. B. Cousins and their sons, Robert (B.A.1967) and Ralph (B.A.1970).

THE MARTIN AND MILDRED DEITSCH SCHOLARSHIP was established in 1987 by Ira J. Deitsch (B.A.1974) to honor his parents and to encourage the study of mathematics.

THE IVAR LOU AND EDGAR DUNCAN SCHOLARSHIP was established in 1987 by family, former students, and other friends to honor Mrs. Duncan (B.A.1924, Ph.D. 1940), a teacher,

and her late husband, who served as professor of Latin and English, chairman of the English Department, and director of graduate studies in English. Mrs. Duncan died in 1997.

THE WILLIAM H. AND SUSAN C. EASON SCHOLARSHIP was endowed in 1998 by William H. Eason (B.A. 1939) and his wife, Susan Cheek Eason (B.A. 1941).

THE ELLISTON SCHOLARSHIP was derived from a bequest in 1910 from Mrs. William R. Elliston (Elizabeth Boddie). She was closely associated with Vanderbilt in its early days and gave the land on which much of the original campus is located.

THE EPSTEIN-MCCLAIN FAMILY SCHOLARSHIP was established in 1997 with a gift from John C. McClain, a member of the Class of 1946 and his wife, Virginia. It was given in gratitude for the educations received by their daughter, Laurie, a member of the Class of 1975, and their son-in-law, Marc Epstein, a 1981 graduate married to their daughter, Bonnie. The scholarship benefits students from the state of Texas.

THE DAWN GROSS MEMORIAL SCHOLARSHIP was established in 1992 by Jenard M. Gross (B.A.1950) and his wife, Gail, in memory of their daughter who died in 1990 while pursuing a career in acting. Preference for the scholarship is given to students majoring in theatre.

THE JENARD M. GROSS SCHOLARSHIP was established in 1969 by Jenard Gross (B.A.1950).

THE MARJORIE V. HAMRICK SCHOLARSHIP was endowed in 1992 with a bequest from Marjorie Vandill Hamrick (A 1944), who died in 1988.

THE CLEBURNE LEE AND ELIZABETH PURSLEY HAYES SCHOLARSHIP was established in 1982 by Annie Lee Hayes Cooney (B.A.1920) and her sister, Edith Brevard Hayes Kitchens (B.A.1922), in memory of their parents. Mrs. Cooney died in 1985 and Mrs. Kitchens died in 1991.

THE E. DOUGLAS JOHNSON JR. FAMILY SCHOLARSHIP was established in 1993 by Mr. and Mrs. E. Douglas Johnson, Jr., to honor their three daughters: Courtney (B.S.1991), Leslie (B.S.1993), and Kelley (B.A.1995). First preference is given to students from New Orleans with second preference to students from Louisiana.

THE MORTON C. JOHNSON SCHOLARSHIP was established in 1987 with a bequest from Mrs. H. Dwight Johnson (Morton Covington, B.A.1921).

THE RHODA KAUFMAN MEMORIAL SCHOLARSHIP was established by the will of Berenice Kaufman in memory of her sister, a Phi Beta Kappa graduate in the Vanderbilt class of 1908. Preference is given to students from the State of Georgia who are majoring in one of the social sciences or preparing for a career in international relations.

THE VANCE AND JULIE LANIER MINORITY SCHOLARSHIP was endowed in 1980 by Vance W. Lanier (B.A.1961).

THE JEANNE AND ALFRED W. LASHER JR. SCHOLARSHIP was established in 1992 by Mr. Lasher (A 1942) to honor his fiftieth reunion year. Preference is given, but not restricted, to residents of (1) West Palm Beach, (2) Palm Beach County, and (3) Florida.

THE BRYN SARA LINKOW SCHOLARSHIP was established in 1994 by Dr. and Mrs. Mark A. Linkow in memory of their daughter, Bryn, who died during her junior year at Vanderbilt. The scholarship is available to students with a cumulative grade point average of 3.0 or above.

THE JOHN LOOMIS SCHOLARSHIP was established in 1996 by John R. Loomis (B.A.1951) who served as general chair for Reunion '96.

THE PAUL E. MANNERS-LILLIAN BAYER SCHOLARSHIP was endowed in 1996 by Paul E. Manners (B.A. 1942) as a tribute to his former high school teacher, the late Miss Lillian Bayer of Cumberland City, Tennessee.

THE KATRINA OVERALL McDONALD AND DOROTHY OVERALL WELLS SCHOLARSHIP was established in 1984 by Mrs. William K. Warren (Natalie Overall, B.A. 1920) in honor of her sisters, Katrina (B.A. 1918) and Dorothy (B.A. 1930).

THE BRANK AND ELIZABETH CARLEN MCLEAN SCHOLARSHIP was established in 1984 by Brank McLean and his wife Elizabeth (B.A. 1942).

THE MARY L. MEFFORD MEMORIAL SCHOLARSHIP was established in 1995 by William R. "Pete" Mefford (B.A. 1963) in memory of his mother who served Vanderbilt with dedication for many years as a telephone operator. She died shortly after retiring.

THE OSCAR GUSTAF NELSON SCHOLARSHIP was established by the family of Dr. Nelson (B.A. 1911, M 1915). The scholarship provides assistance for students to pursue a premedical course of study. Although this is not a loan, the recipients are asked to accept a moral obligation to repay the scholarship when they are able.

THE LACY R. OVERBY MEMORIAL SCHOLARSHIP was established in 1994 as a tribute to Lacy Overby (B.A. 1942, M.S. 1948, Ph.D. 1951) by his wife, Elizabeth Hulette Overby (B.A. 1947), family, colleagues, and friends. Dr. Overby served on the Vanderbilt chemistry faculty from 1947 to 1948. He died in 1994 after a long and distinguished career in the pharmaceutical and biotechnology industries. Mrs. Overby died in 1998.

THE STEPHEN L. OVERBY MEMORIAL SCHOLARSHIP was established in 1959 by Dr. and Mrs. Lacy R. Overby in memory of their son who died at the age of three.

THE CHARLES PARMER AND MARGARET MANSON PARMER SCHOLARSHIP was established in 1989 with a bequest from Margaret Manson Parmer.

THE CAROLINE PENROD-MARTIN MEMORIAL SCHOLARSHIP was established in 1989 by family and friends in memory of Caroline Penrod-Martin (B.A. 1969).

THE SUE SUGG PIANT MEMORIAL SCHOLARSHIP was established in 1972 by Dr. W. D. Sugg (B.A. 1919, M.D. 1923) as a memorial to his sister, who was a Vanderbilt graduate. The scholarship, awarded to students majoring in classical studies, is based on financial need and/or academic merit.

THE EDGAR M. AND ESTHER M. PILKINTON SCHOLARSHIP was endowed in 1990 through the bequest of Edgar Merrill Pilkinton (B.A. 1925, M.S. 1926).

THE JAMES A. AND MATILDA D. PILKINTON SCHOLARSHIP was endowed in 1991 through the bequest of Edgar Merrill Pilkinton (B.A. 1925, M.S. 1926) to honor his parents.

THE REVES FAMILY SCHOLARSHIP was endowed in 2000 by Dr. Joseph Gerald Reves, Jr. (B.A. 1965) and his wife, Margaret. The scholarship benefits students from North Carolina, South Carolina, Alabama, and Mississippi.

THE I. A. AND LUCILE ROSENBAUM SCHOLARSHIP was established in 1992 by Ike A. Rosenbaum, Jr. (B.A. 1942), and his wife, Lucile Reisman Rosenbaum (B.A. 1935). The scholarship benefits students from the city of Meridian and the county of Lauderdale in Mississippi.

THE SAVAGE-ZERFOSS SCHOLARSHIP was established in 1986 by Dr. Thomas B. Zerfoss, Jr. (B.S. 1917, M 1922), and his wife, Dr. Kate Savage Zerfoss (B.S. 1918). The scholarship provides assistance to students preparing for medical school.

THE A. L. SELIG SCHOLARSHIP was established in 1981 by Bebe Selig Burns (B.A.1968) in memory of her grandfather.

THE MARY ELEANOR STEELE SCHOLARSHIP was established in 1941 through a bequest from Professor Emeritus Robert Steele and his wife, Elizabeth, in memory of their daughter. Professor Steele was a member of the faculty from 1901 until 1938. Preference is given to a female student majoring in Latin or classical studies.

THE SARA EDMOND SAWYER STONE, BELO STONE, M.D., AND LARRY STONE JR. SCHOLARSHIP was established in 1979 by Dr. Lawrence A. Stone (B.A.1954) to honor his father, Belo Stone (M.D. 1927), and the memories of his mother, Sara (A 1927) and his son, Larry, Jr. Dr. Belo Stone died in 1993. His bequest increased the fund, which benefits pre-medical students from South Texas.

THE UNDERGRADUATE SCHOLARSHIP FUND FOR ARTS AND SCIENCE was established with several contributions including:

A gift in 1995 from Ann Dillon (B.A.1933) in memory of her nephew, Lewis F. Lyne (B.A.1943), Board of Trust member 1970 to 1982

A bequest from John David Raeber (B.A.1981), who died in 1997

A gift in 1998 from Mr. and Mrs. Walter H. Clark in honor of their daughter, Pauline, an undergraduate in the College of Arts and Science

A gift from Qung W. Go (B.A. 1973) and Mae K. Go (B.A. 1972) in honor of their parents, Mr. Jip Y. Go and Mrs. Sit Moore Hing Go

THE ROSA LEE WALSTON SCHOLARSHIP was established in 1970 by Lester H. Smith (B.E. 1954) and his wife, Kathryn L. Smith (B.A.1953), to honor her aunt. Dr. Walston headed the department of English at Georgia Women's College for many years. She died in 1995.

THE BERTHA EVANS WARD SCHOLARSHIP was established in 1970 by Mabel Ward in memory of her sister. This award is made to a female student majoring in the humanities.

THE MARION B. AND BRENT S. WATTS MEMORIAL SCHOLARSHIP, established in 1975 with a bequest from Marion B. Watts, is available to students majoring in science.

THE ALFRED W. WILSON MEMORIAL SCHOLARSHIP was established in 1989 by family and friends to honor Alfred Wilson (B.A.1964), who died in a 1985 plane crash.

THE J. DOUGLASS AND DOROTHY K. WOOD SCHOLARSHIP was established in 1990 by a Vanderbilt alumnus to honor his parents. The fund provides financial assistance to women and minority students majoring in physics.

THE LINDA ELIZABETH WYTHES CLASS OF 1993 SCHOLARSHIP was endowed in 1993 by Mr. and Mrs. Paul M. Wythes to honor their daughter.

School of Engineering Scholarships and Loan Funds

THE WILBERT E. CHOPE MEMORIAL SCHOLARSHIP was established in 1993 by Douglas B. Chope (B.S.E. 1986, M.B.A.1988) and his wife, Teresa Ford Chope (B.A.1987), to honor the memory of his father, who died in 1984. A member of the class of 1945, Wilbert Chope was the founder and CEO of Industrial Nucleonics/AccuRay. Awards are available to majors in computer science and electrical engineering.

THE CORENSWET MEMORIAL SCHOLARSHIP was established in 1975 by Abe Corenswet (B.E. 1931) to honor members of his family. He died in 1994.

THE F. J. LEWIS/J. R. HENDRICKSON LOAN FUND was established by alumni and friends of the late Fred J. Lewis, dean of the School of Engineering from 1933 to 1959, and the late Joe R. Hendrickson, professor of applied mechanics.

THE DAVID K. MATTHES SCHOLARSHIP was established in 1971 by Ann Johnson Matthes (B.E. 1968) in memory of her husband. Recipients must maintain a grade point average of at least 2.5, continue to demonstrate financial need, and be involved in service and/or leadership activities on campus.

THE CHARLES PARMER AND MARGARET MANSON PARMER SCHOLARSHIP was established in 1989 with a bequest from Margaret Manson Parmer.

THE WILLIAM H. ROWAN SCHOLARSHIP was established in 1969 by family, friends, and students of the late Professor William H. Rowan, Sr. (B.E. 1926), who taught civil engineering from 1946 until his retirement in 1968. The scholarship is available to engineering students who compete in minor intercollegiate sports while at Vanderbilt.

THE WILL H. SHEARON JR. SCHOLARSHIP was endowed in 1964 through the will of Mr. Shearon, who graduated from Vanderbilt in 1936, *magna cum laude*, with a B.E. in chemical engineering.

Peabody College Scholarships and Loan Funds

THE EULEEN BROWN BERRY SCHOLARSHIP was endowed in 1990 through the bequest of Euleen Berry (B.A. 1923), a former teacher in Tennessee and Arkansas.

THE JOSEPHINE R. BINNS SCHOLARSHIP FOR TEACHERS was established in 1997 by Josephine R. Binns, a 1930 Peabody graduate and Nashville community leader. The scholarship benefits students who plan teaching careers, with preference given to students from the Southeast.

THE HUGH L. W. BRINKLEY SCHOLARSHIP was established in 1940 by Mrs. Elizabeth Currier in memory of her brother.

THE A. J. CAVERT MEMORIAL SCHOLARSHIP was established in 1921 by Misses Annie Cavert, Corrine Cavert, Ida Cavert, and Mr. and Mrs. Tillman Cavert to honor the memory of Dr. A. J. Cavert. Preference is given to graduates of Hume-Fogg High School in Nashville.

THE ELIZA M. CLAYBROOKE MEMORIAL SCHOLARSHIP was established in 1947 by the bequest of Virginia O. Claybrooke in memory of her sister, Eliza, to provide financial assistance to "a lineal descendent of some Confederate Soldier."

THE MAGGIE P. CUNNIGGIM MEMORIAL SCHOLARSHIP was established in 1934 with a bequest from Mrs. Alberta P. Bourne.

THE JAMES ATCHISON AND MAME S. DALE MEMORIAL SCHOLARSHIP was established in 1959 with a bequest from Dr. James Atchison Dale (D.D.S. 1891) and his wife, Mame Shuler Dale.

THE MARY CRITTENDEN THOMAS BISHOP DALE SCHOLARSHIP was established in 1996 by Nancy Dale Palm to honor her mother, a Peabody graduate in the class of 1910. An elementary school teacher, Mary Dale educated six daughters after the 1926 death of their father, Dillard Young Dale, a 1904 Peabody graduate. The six sisters are Vanderbilt alumnae: Katherine Dale Potts (B.A. 1946), Nancy Dale Palm (B.A. 1942), Lillian Dale Trabue (A 1941), Ruth Dale Carmichael (A 1938), Dorothy Dale Gray (A 1935), and the late Mary Elizabeth

Dale Spearman (B.A. 1932). The scholarship benefits elementary education majors with a preference given to students from Tennessee or Texas.

THE CHRISTINE EHRING MEMORIAL STUDENT ASSISTANCE FUND was established as a loan fund by friends and family.

THE ALBERT J. AND MARGARET K. GASSER MEMORIAL SCHOLARSHIP was established in 1976 by Albert Gasser in honor of his late wife.

THE CAROLINE LUCY HEAFEY SCHOLARSHIP was established in 1997 by Mr. and Mrs. Richard John Heafey to honor their daughter, Caroline, a Peabody graduate in the Class of 1997.

THE WILLIAM AND SALLIE HUME SCHOLARSHIP was established in 1967 with a bequest from Mrs. Hume (Sallie McKay) to honor her husband, William Bradford Hume (B.S. 1909, L 1910).

THE H. REID HUNTER ENDOWED LOAN FUND was established in 1989 with a bequest from H. Reid Hunter (Ph.D. 1937).

THE JAMISON SCHOLARSHIP FUND was established in 1971 by Henry D. Jamison, Jr., and the Jamison Foundation, Inc.

THE BILL JUSTICE MEMORIAL FUND was established by friends of Bill Justice (P.B.S. 1973) to provide emergency student loans at the discretion of the dean.

THE MINA LATIMER LANHAM SCHOLARSHIP was established in 1997 with a bequest from Elizabeth Lanham in honor of her mother, a Peabody graduate in the Class of 1897. Mrs. Lanham served as a teacher and principal in schools located in Georgia, Louisiana, and Texas.

THE JOHN W. LITTLE EMERGENCY LOAN FUND was established by Mrs. John W. Little and friends of her late husband to provide emergency loans to students.

THE J. C. AND MYRTLE LOONEY SCHOLARSHIP was established in 1964 with gifts from Mrs. Myrtle Looney (P.B.A.1903) and her nephew, the Honorable James Cullen Looney (P.B.A.1921, B.A.1924, L 1926).

THE JAMES SPENCER MCHENRY SCHOLARSHIP was established by Mrs. Carrie Hoyte McHenry to honor the memory of her husband, James Spencer McHenry (A 1887).

THE LAVERNE NOYES SCHOLARSHIP was established with a bequest in 1938 to provide scholarship assistance to World War I veterans and their descendants.

THE LANIER AND IRENE PARNELL SCHOLARSHIP was endowed in 1979 to assist students from Tennessee, South Carolina, Georgia, Alabama, Mississippi, Louisiana, or Arkansas.

THE PENDLETON-MALCOM SCHOLARSHIP was endowed in 1993 with a bequest from Louzelle Thompson Malcom (P.M.A. 1943) of Tulsa, Oklahoma. Preference is given to students with a second major in English.

THE MARY SCALES MEMORIAL SCHOLARSHIP was established in 1986 by Mrs. Bonnie Scales Foster (P.B.S. 1935, P.M.A. 1939) in memory of her sister, Mary (P.B.S. 1932, P.M.A. 1939). Mrs. Foster died in 1990.

THE BONNIE L. TERWILLIGER TEACHING LOAN FUND was established in 1992 by Mr. and Mrs. J. Ronald Terwilliger to honor their daughter, Bonnie Leigh, a 1992 Peabody *magna cum laude* graduate. She received her M.Ed. in 1994 and began a career in teaching. One year of documented teaching service after graduation will forgive the loan amount received for one year of undergraduate study.

THE UNITED DAUGHTERS OF THE CONFEDERACY SCHOLARSHIP was established in 1927 by the Mary Mildred Sullivan Chapter of the UDC.

Military Scholarships

ARMY ROTC SCHOLARSHIPS. Refer to the chapter on Special Programs for Undergraduates for information concerning eligibility and application procedures for these awards.

NAVAL ROTC SCHOLARSHIPS. Refer to the chapter on Special Programs for Undergraduates for information concerning eligibility and application procedures for these awards. In addition to the traditional scholarship program, Tweeddale Scholarships are available for freshmen and sophomores not previously affiliated with the NROTC program. Preference for Tweeddale Scholarships is given to African Americans and Hispanic Americans in any major and to other students majoring in engineering, chemistry, or physics.

AIR FORCE ROTC SCHOLARSHIPS are available to Vanderbilt students in the Air Force ROTC program administered through Tennessee State University. Information on application procedures for these scholarships can be obtained from Commanding Officer, AFROTC, Tennessee State University, Nashville, Tennessee 37209.

THE KEVIN E. LONGINOTTI MEMORIAL ARMY SCHOLARSHIP was established in 1998 by Army ROTC in memory of Kevin E. Longinotti, an outstanding Vanderbilt University student and Army ROTC cadet. This is a four-year Army ROTC scholarship. Preference will be given to entering students of high academic standing who have served as Junior ROTC battalion commanders.



College of Arts and Science



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A Community for Liberal Learning

THE College of Arts and Science, at the heart of the larger University, provides intellectual stimulation, training, and incentive designed to foster the lifelong liberal learning of its graduates. It offers challenging, forward-looking programs of study in the humanities, natural sciences, and social sciences resourcefully taught by distinguished faculty recognized for excellence in research, scholarship, and creative expression. It promotes self-realization and expression in the context of social responsibility. It honors by disciplining and broadening the life of the mind.

Faculty and Students

The College derives its strength from the range of its academic offerings, from the quality of the faculty who teach, and from the quality of the students who come to learn. Traditionally fortunate in its ability to attract and retain a superior faculty, the College has about 375 full-time professors who supplement their achievements in the classroom with significant research and writing. Many faculty members hold awards for distinguished scholarship and have been elected to high offices in their professional associations, including the Classical Association of the Middle West and South, the American Economics Association, the American Political Science Association, the American Philosophical Association, the American Physical Society, the American Historical Association, and the Biophysical Society.

The quality of the College's faculty is matched by that of its diverse student body. Undergraduates come from the fifty states and fifteen to twenty foreign countries and are almost evenly divided between men and women.

The Advising System

Entering freshmen are assigned faculty advisers, all regular members of the College faculty, chosen from the general area of the student's indicated interest. These first advisers are called "pre-major advisers" and counsel students during their first three and one-half semesters or until the students choose majors, when they are assigned advisers in their major department or program. Pre-major advisers are especially trained to help students move efficiently through the requirements of the College Program in Liberal Education. Students are encouraged to see these advisers at any time but must see them at least three times during the freshman year—during registration for the fall semester, for the spring semester, and for the fall semester of the second year. Because these advisers are chosen from the general area in which the student has expressed primary interest, they can help with choice of a major.

During the last two years of study, when a student is acquiring depth of knowledge in a major field, studies are guided by a specialist in that field. Students are not required to see major advisers, but the advisers are available for guidance and counseling at any time and are faculty members with whom advisees may be studying.

Advisers are generally happy to talk over any problems students may have, although their chief function is academic counseling. In addition, two members of the office of the Dean of the College, themselves teaching faculty members, have as their principal duty counseling students and referring them to sources of expertise on non-academic problems.

Undergraduate Research

All students have ample opportunity to participate in faculty research projects or to pursue research projects independently, both on campus and at remote sites. Such research has led to the publication of coauthored or student-authored papers and other presentations to the scholarly community. Summer research by undergraduates in all fields may be subsidized by the University.

The Learning Center

The goal of the College Learning Center is to help good students become better learners. It offers academic skills counseling, individual and small-group tutoring, and a mini-course on learning strategies. Most of the services of the center are offered to students in the College free of charge, including hours of tutoring in most freshman and sophomore courses.

Microcomputer Laboratories

The College of Arts and Science established the Microcomputer Laboratories in 1984 to support instruction in the College and the University. At present, four facilities—two laboratories and three computer classrooms—house a total of 147 systems. The facilities are conveniently located in the following buildings:

Garland Hall Lab, a 31-seat classroom and 24-seat walk-in lab with Windows 95 systems.

Branscomb Quadrangle Lab, a 32-seat walk-in lab with 24 Windows 95 and 8 Macintosh systems.

Stevenson Center Computer Classroom, with 30 Macintosh systems.

Wilson Hall Computer Classroom, with 30 MacOS systems.

All of the College's computer labs and classrooms offer a wide variety of "courseware" and commercial "productivity software," including word processing packages. All of the systems are connected to laser printers and/or inkjet printers. In addition to accessing software on the local servers, students may also connect to campus services and the Internet, including e-mail. Walk-in use of the Microcomputer Laboratories and Computer Classrooms is free, but there is a nominal charge for printing.

The Garland and Branscomb computer labs are open 90 hours per week to walk-in users and the Branscomb lab is open seven days a week. The computer classrooms in Stevenson Center and Wilson Hall are available for walk-in use during the late afternoon and evening hours. In addition to the College facilities, Academic Computing and Information Services (ACIS) operates a 24-hour computer cluster that accesses local and international information services (see "Computer Resources" in the chapter, "The University"). As a result, access to computers in the College is quite good. During the last academic year, the labs were full for a total of only 87 hours.

The College supports IBM-compatible and Macintosh systems. Having your own computer and printer is useful, but not necessary for success at Vanderbilt. If you have a computer that you would like to bring to Vanderbilt, or if you are contemplating the purchase of a system, please check the specifications chart in the ResNet letter that is being sent to you by the Office of Residential and Judicial Affairs.

Public Lectures

THE BERRY LECTURES. Established in 1988 through the generosity of Kendall and Allen Berry, John and Shirley Lachs, Steve Turner, and Jim Burke. Three annual lectures—the Berry lecture, the Steve Turner lecture, and the Jim Burke lecture—are given by distinguished philosophers.

THE LOUIS JACOB BIRCHER LECTURE IN CHEMISTRY. Established in 1976 in recognition of Professor Bircher's forty-one years of service to Vanderbilt beginning in 1921. He served as the sole professor of physical chemistry until 1954, was chair of the Department of Chemistry from 1955 to 1961, and retired as professor emeritus in 1962. Family, colleagues, students, and friends of Professor Bircher have provided generous support for the series. The lecture is presented by a leading physical chemist.

THE BYRN HISTORY LECTURE. Established in 1986 and endowed by the late J. W. Byrn of Dickson, Tennessee, a student and admirer of the thought of the British historian Arnold Toynbee. Annual lectures deal with his fields of interest: world history, philosophy of history, and historiography.

THE FREDERICK LEROY CONOVER MEMORIAL LECTURE. First given in 1977 in honor of Vanderbilt's first analytical chemist. Professor Conover came to Vanderbilt in 1923 and remained for thirty-seven years. Lectures given by a distinguished analytical chemist are supported by family, colleagues, students, and friends of Professor Conover.

THE WALTER CLYDE CURRY SHAKESPEARE LECTURE. Inaugurated in 1982 and funded by one of his former students, this lectureship honors the late Walter Clyde Curry, distinguished medieval and Renaissance scholar, author of books on Chaucer, Shakespeare, and Milton, and for forty years beloved professor of English at Vanderbilt. Bringing to campus in alternate years eminent Shakespearean scholars and experienced Shakespearean performers, the lectureship gratefully recognizes Professor Curry's devoted service and lasting contributions to the University.

THE WAITE PHILIP FISHEL LECTURE. Established in 1974 as a tribute to Professor Fishel, who was known as an outstanding, popular teacher and was renowned for his

research in metallurgy. Through the generosity of family, colleagues, students, and friends, the lecture is presented by a leading inorganic chemist.

THE HARRY C. HOWARD JR. LECTURESHIP. Established in 1994 at the Robert Penn Warren Center for the Humanities in honor of Harry C. Howard Jr. (B.A. 1951). The lectureship was endowed by Mr. and Mrs. Thomas Nash Jr. and Mr. and Mrs. George Renfro, all of Asheville, North Carolina, in honor of their longtime friend and attorney. The lectureship allows the Warren Center to bring an outstanding scholar to Vanderbilt annually to deliver a lecture on a significant topic in the humanities.

THE ARTHUR WILLIAM INGERSOLL MEMORIAL LECTURE. Established in 1973 to honor Arthur Ingersoll, professor of organic chemistry at Vanderbilt until his death in 1969. Each year contributions for this lecture are received from family, colleagues, students, and friends. A leading organic chemist is invited to present the lecture.

THE CARL K. SEYFERT LECTURE IN ASTRONOMY. Established in 1983 as part of the astronomy program's commemoration of the thirtieth anniversary of the Arthur J. Dyer Observatory. The lectureship recognizes the untiring efforts and contributions to astronomy made by Carl K. Seyfert, professor of astronomy and first director of the Dyer Observatory. A distinguished astronomer is invited to present this lecture every third year.

THE SHANKS LECTURES. Established in 1984 and named for E. Baylis Shanks and Olivia H. Shanks in honor of their accomplishments in the fields of mathematics and education and in recognition of their loyalty and service to Vanderbilt University, these lectures are presented on two successive days in the fall of each year. A special committee from the Department of Mathematics, influenced by the professional interests of Professor and Mrs. Shanks, chooses the lecturers from mathematicians of the highest reputation. The topics of the lectureship vary from year to year according to the area of specialization of the speaker chosen. The lectures have been endowed by members of the family of Olivia and Baylis Shanks.

THE FRANCIS G. SLACK LECTURES IN PHYSICS. Established in 1977 by the Department of Physics and Astronomy in honor of Francis G. Slack, former Landon C. Garland professor of physics and chair of the department, these lectures recognize his many contributions to physics. The series was first partially endowed by his colleagues and students and then with the generous help of Professor Slack. Each speaker gives one lecture of general interest to the university and one more specialized lecture for the department.

THE DAVID STEINE LECTURE. Established in 1978 as a memorial to David Steine, professor of business administration in the Department of Economics and Business Administration, by members of his family, friends, and associates. The lecture is devoted to an economic problem of interest to the general public.

THE GERTRUDE VANDERBILT AND HAROLD S. VANDERBILT VISITING WRITERS PROGRAM. Established in the Department of English in 1958 under the generous sponsorship of the late Mrs. Vanderbilt, this program has annually presented readings and public lectures by a poet, a novelist, and a critic—each of whom also visits classes and meets informally with members of the University and Nashville communities. Recent participants have included Dannie Abse, Madison Smartt Bell, Ellen Gilchrist, Alison Lurie, Czeslaw Milosz, Wyatt Prunty, Ann Thwaite, Anthony Thwaite, and Helen Vendler.

Degree Programs in the College

“The work of the College of Arts and Science is fundamental. It is the basis of all professional study. No professional school can be self-sufficient. The College in its undergraduate and graduate work must remain the heart of the whole situation, and send its quickening life blood into every fiber and tissue.”

—Chancellor James H. Kirkland
at the semicentennial celebration
of the University
October 1925

CHANCELLOR Kirkland’s words were prophetic of our times as well as true of his own. Since its founding Vanderbilt has pursued its mission of excellence in the liberal arts with a commitment to liberal learning that is the special concern of the College of Arts and Science. Liberal learning endures because it brings men and women to subjects, concepts, and modes of thought that enable them to think critically about where humanity has been and where it ought to be going. The liberal arts spark curiosity and broaden vision, help to instill understanding of matters otherwise unknown, and encourage individuals to live their lives with a sense of purpose, context, and relatedness. A liberal education has perennial relevance and usefulness: it should prepare its recipients to think precisely, to reason clearly, and to judge wisely—all practical considerations in the pursuit of constructive and satisfying lives and in the practice of today’s professions and vocations.

Today the College of Arts and Science maintains its historic position as the heart of the University. Excellence in undergraduate and graduate education is its unwavering aim.

Academic programs of the College are varied and broad in scope, with majors offered in the following fields:

Anthropology	English	Physics
Biological Sciences	Fine Arts	Political Science
Biology	French	Psychology
Chemistry	Geology	Religious Studies
Classical Languages	German	Russian
Classics	History	Sociology
Communication Studies	Mathematics	Spanish
Economics	Molecular Biology	Theatre
	Philosophy	

Students may combine one of the majors listed above with a second major taken within or outside the College. For descriptions of programs that may be of interest to College students, see the departmental listings for Computer Science and Music in this section, or other departmental majors described in the Blair, Engineering, and Peabody sections of this catalog.

Interdisciplinary majors combining courses from several fields are also offered. Students may seek approval for individually designed programs, or for one of these defined interdisciplinary majors:

Optional minors are offered in the following fields:

African American Studies	French and European Studies	Russian and European Studies
American and Southern Studies	German Studies	Spanish and European Studies
Comparative Literature	Latin American and Iberian Studies	Spanish, Portuguese, and European Studies
East Asian Studies	Neuroscience	Spanish and Portuguese
Economics and History	Public Policy Studies	
European Studies		

African American Studies	Environmental Science	Mathematics
Art History	Environmental Studies	Molecular Biology
Astronomy	European Studies	Music
Biological Sciences	Film Studies	Music History
Business Administration	French	Music Performance
Chemistry	Geology	Neuroscience
Child Development	German	Philosophy
Classical Studies	History	Physics
Cognitive Studies	Italian	Political Science
Communication of Science, Engineering, and Technology	Japanese Language and Culture	Psychology
Communication Studies	Jewish Studies	Religious Studies
Comparative Literature	Latin American Studies	Russian Studies
Computer Science	Linguistics	Russian and European Studies
East Asian Studies	Managerial Studies: Information Systems	Sociology
Economics	Leadership and Organization	Spanish
English	Financial Economics	Studio Art
		Theatre
		Women's Studies

Degrees Offered by the College

The College of Arts and Science offers two degrees, the Bachelor of Arts and the Bachelor of Science. Students in the two degree programs are subject to the same academic standards and to the same policies concerning honors, probation, academic discipline, and residence requirements.

At the time a major is declared, the student indicates the desired degree. A change from one plan to the other may be made at any time prior to the final semester of residence, but only one baccalaureate degree will be conferred.

The Bachelor of Arts

The Bachelor of Arts degree is granted on completion of 120 semester hours of creditable college work with a final grade point average of at least 2.000, completion of the College Program requirements and the requirements of the major, and successful completion (in the freshman year) of a freshman seminar.

Candidates for the Bachelor of Arts degree may take no more than 6 hours of approved professional work of all types within the 120 hours required for the degree. Exceptions to this rule are made for bona fide candidates for teacher licensure (who may offer up to 12 hours).

The Bachelor of Science

The Bachelor of Science degree differs from the Bachelor of Arts degree in the extra flexibility it provides for including work offered outside the College of Arts and Science. Otherwise, the requirements for the two degrees are the same. They specify the same minimum total hours (120), the same minimum grade point average (2.000), the same CPLE requirements, the same requirements for a major, and the same requirement of a seminar in the freshman year.

Bachelor of Science students must complete one or more departmentally based majors offered in the College of Arts and Science or an individually created interdisciplinary major. Bachelor of Science students may also pursue an approved second major or a minor offered in another school of the University. They may include in their programs professional courses in excess of those allowed to count toward the Bachelor of Arts degree, provided these courses are also approved for Bachelor of Arts students as professional hours.

It is not intended that the choice between Bachelor of Arts and Bachelor of Science degrees be based on the major or majors completed by a student in the College of Arts and Science. The main consideration in the choice is whether the student wants to pursue a second major or a minor outside the College or to take professional work outside the College above the 6-hour limit specified for the Bachelor of Arts degree.

Freshman Seminars

Freshman seminars offer students an intellectually stimulating introduction to the world of the scholar, with opportunity for scholarly study in a small-class setting under the leadership of a regular (often a senior) faculty member. These seminars are open only to freshmen and enroll no more than twenty students each, and many of them are limited to fifteen. But freshman seminars differ from other freshman classes not only in size but also in how students learn in them.

In seminars freshmen learn what kind of questions scholars in a discipline ask themselves and how they go about answering those questions. Indeed, freshmen in seminars are assigned problems to solve, and they learn to set problems for themselves. They are guided by a trained and active researcher to the materials they need to solve those problems. They gather relevant data, think about the implications of this information, and reach conclusions. Then they communicate their conclusions to other members of the seminar orally or in writing. Those conclusions become the subject of discussion by the instructor and other members of the seminar. That is, freshmen learn how to learn and how to communicate effectively what they have learned.

After completing one of these seminars, students approach all subsequent study in a more committed and more excited fashion, having discovered how much more they can learn by involving themselves in their own education. They have also laid the foundation for life-long learning—a necessity in a world of rapidly changing technology, where many people pursue more than one career in a lifetime.

The Faculty of the College believes the seminar experience to be so important to later learning that freshmen are required to complete a freshman seminar successfully in order to qualify for sophomore standing (see “Academic Discipline” in the chapter on Academic Regulations). Freshmen will find seminars an exciting way of meeting certain requirements of the College Program in Liberal Education (see below), fulfilling hour requirements in a major, meeting prerequisites for 200-level courses, or just trying out a discipline to discover whether they have an interest in it.

Seminar offerings change each year. The booklet *Freshman Seminars*, available on request from the Office of the Dean, gives full descriptions of current seminar offerings and information on whether a particular freshman seminar can be used to fulfill requirements of the College Program or of a major in its field or can serve as prerequisite to advanced courses in its field.

College Program in Liberal Education

Students seeking either the Bachelor of Arts degree or the Bachelor of Science degree plan their early studies under the College Program in Liberal Education (CPLÉ). This program is designed to help students refine their

basic skills and to bring them into contact with the variety of disciplines, subjects, and modes of thought essential to a liberally educated person.

The College Program sets requirements in *writing*, *mathematics*, and *foreign language* as well as in the following four areas:

History and Culture. 9 to 12 hours, including

American Component. 6 hours

International Component. 3 to 6 hours

Humanities. 9 hours

Natural Science. 11 hours, including

Basic Science. 8 hours

Science and the World. 3 hours

Social Science. 6 hours

2000/2001 CPLE Approved Courses

The courses and test scores presented below are those approved for 2000/2001 for the CPLE. Because the program will continue to be refined in the future, it is likely that new courses will be added, that some courses now listed will be deleted, and that achievement levels will change.

Students who in 2000/2001 complete listed CPLE courses satisfactorily or who matriculate with achievement scores at the indicated levels will be certified as having satisfied the 2000/2001 CPLE requirements, regardless of any changes that may be made in the future. In subsequent years, a student's courses and test scores will qualify only if they appear on the program description for that year.

Students must be careful each year to use a current program description as a guide to course selection under the CPLE. Copies are available from the Office of the Registrar, College of Arts and Science. Although the College provides assistance through the advisory system, various publications, and consultations in the Dean's office and the Registrar's office, each student is responsible for selecting a program of courses that fulfills CPLE requirements.

College Program Requirements

Writing

Fluency in writing the English language is critical for success in college work and for effectiveness as an educated person in our society. (Indeed, it is so critical that the writing requirement is the only one in the CPLE that must be completed according to a schedule; see the last paragraph of this section on Writing.) Therefore all students, except those noted below, must first successfully complete English 100W and then complete two other W courses (courses that meet the writing requirement are indicated with a "W" in this catalog and in the *Schedule of Courses*).

Students who score 560 or above on the College Board SAT II Writing Test are not required to take English 100W (indeed, it will not count toward their

writing requirement, although they may take it as an elective) but must successfully complete two other W courses.

Students who score 760 or above on the College Board SAT II Writing Test or who score a four or a five on an Advanced Placement Examination in English (either English language and composition or English literature and composition) are obligated to take one W course (other than English 100W) at Vanderbilt. Transfer students who receive transfer credit for two or more W courses must, nevertheless, complete one W course (other than English 100W) at Vanderbilt. Both groups must successfully complete this W course by the end of the first academic year at Vanderbilt.

The writing courses for 2000/2001 are as follows:

African American Studies 115W
American and Southern Studies 115W
Anthropology 115W
Classics 115W
Communication Studies 115W
Comparative Literature 106W, 107W, 108W
Economics 115W
English 104W, 105W, 106W, 109W, 112W, 115W, 118W, 120W
Fine Arts 115W
German 115W
History 115W
Honors 181W (open to College Scholars only)
Humanities 105W, 106W, 107W, 108W, 115W
Music 115W
Philosophy 100W, 115W
Political Science 115W
Religious Studies 110W, 115W
Science, Technology, and Humanities 115W
Sociology 115W
Theatre 115W
Women's Studies 115W

Students required to take English 100W must complete that course and one additional writing course during the first year. Other students who are required to take writing courses must complete at least one during the first year, and all students must satisfy the full requirement before the end of the second year.

Mathematics

The methods of mathematics are important in the study of the natural and social sciences—and these methods are becoming increasingly useful in the humanities. As confirmation that they possess the necessary foundation in mathematics, all students are required either to have a College Board SAT II Mathematics Test score of at least 620 (Level I) or 570 (Level II) or to complete one of the following alternatives:

1. Mathematics 127a–127b, or
2. Mathematics 140, or
3. Mathematics 150a and Mathematics 180, or
4. A course sequence involving mathematics listed under the Options in Mathematical Reasoning/Foreign Language below.

Foreign Language

A basic capability in foreign language represents a beginning that can eventually lead to direct acquaintance with other literatures and cultures. It can also improve one's use of English. To demonstrate this beginning competence, all students are required to present a satisfactory score on an Achievement Test or SAT II Test in foreign language or to complete a first-year course sequence or a higher-level course in foreign language at Vanderbilt. Students who have at least the following scores on College Board SAT II Subject Tests will have satisfied the first-year language requirement: French, 540; German, 470; Hebrew, 530; Italian, 540; Japanese (with listening), 440; Latin, 530; Spanish, 520. The Foreign Language requirement may be fulfilled by completing satisfactorily one of the following courses or a higher numbered course: Chinese 202, French 101b, German 102, Greek 202, Hebrew 111b, Italian 101b, Japanese 202, Latin 100, Latin 102, Portuguese 200, Russian 102, Spanish 101b.

Options in Mathematical Reasoning/ Foreign Language

All students should develop their abilities in abstract reasoning, symbolic manipulation, ordering, memory-work, and other types of analysis involving the expression of ideas in a way other than through the English language. Students therefore are required to complete at least one of the following two options:

1. Mathematics 150a–150b, 155a–155b, or 165; or Mathematics 140, 155a, and Economics 150, Mathematics 180, or Philosophy 202.
2. One of the third-semester or higher-level courses in a foreign language or a College Board SAT II Test score at or above the levels indicated: French, 590; German, 600; Hebrew, 570; Italian, 600; Japanese (with listening), 490; Latin, 630; Spanish, 630. Third-semester foreign language courses are as follows: Chinese 202, French 104a, German 103, Greek 203, Hebrew 113a, Italian 103, Japanese 202, Latin 103, Portuguese 200, Russian 203, Spanish 104.

It is expected that a well-rounded student will elect to fulfill both of these options, for they are valuable in their own right as well as preparatory for advanced work in many fields. Students who want to be considered for membership in Phi Beta Kappa should also fulfill both options.

Other Areas of Study

Students must satisfy the requirements in all four areas described below. In designing their programs, students should be aware of the following restrictions: (a) *no area requirement may be fulfilled by courses taken*

solely within one department; (b) no more than one course that satisfies the writing requirement may be offered in satisfaction of any area requirement; (c) courses listed in more than one area may be used to satisfy only one area requirement.

History and Culture (9 to 12 hours)

Students will study the history and culture of their own and other societies. Certain course work in the humanities, social science, and natural science can contribute to such historical and cultural understanding. The requirements in History and Culture, however, demand a sustained consideration of the American national experience and a grasp of the thoughts, language, or experiences that have contributed to the formation of at least one other cultural or national tradition.

This requirement must be completed with courses from two or more departments. Credit for courses in a single department will not satisfy the requirement. Crosslisted courses may not be used to defeat this rule.

American Component (6 hours).

The American Component offers insights into the nature and development of distinctive aspects of the American experience. Courses that satisfy this requirement deal with important themes in the American experience, provide a historical perspective, and cover a substantial period of time.

Approved courses for 2000/2001 are as follows:

African American Studies 263, 279, 280

American and Southern Studies 100, 115W(02), 205, 210, 212, 220, 221, 222, 263

Classical Studies 222

Communication Studies 220, 221

Economics 226, 245

English 212, 263, 266

Fine Arts 240, 241

History 115W(50), 115W(51), 170, 171, 268, 269, 270, 271, 279, 280, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291

Music (MUSL) 147

Political Science 100

Sociology 249, 251

Theatre 204

Women's Studies 251, 286–287

International Component (3 to 6 hours).

The International Component expands cultural horizons by providing insight into the distinctive features and patterns of a major culture or cultural tradition, either contemporary or historical. Courses satisfying this requirement also provide perspective on American society by showing it against the background of a different age or culture.

Language is both a part of culture and a vehicle affording further insight into other cultures. The College Program requires a minimum level of competence in a foreign language, and offers incentives to continue language study to the intermediate level and beyond. The student will choose one of three options:

1. Completion of the intermediate level (or higher) in a foreign language and an additional approved course in the foreign language or a course taught in English dealing with the history or culture of that area or civilization.
2. One semester of full-time study in one of the overseas programs listed below.
3. Two broadly conceived survey courses taught in English and dealing with a single major cultural area or tradition significantly different from that of the United States. Approved courses are listed below.

International Component Option 1. Completion of the intermediate level in a foreign language and one additional course in the literature, culture, or history of that area or civilization. For 2000/2001 a choice may be made among eleven foreign languages, as follows:

<i>Language</i>	<i>Intermediate Level</i>	<i>Additional Course</i>
Chinese	202	Chinese 241, 242; Fine Arts 252; History 154, 155, 248; Political Science 216
French	104b	French 207, 208, 215, 220; History 234, 235, 236
German	104	German 221, 222; History 231
Greek	204 or 240	Greek 212; Classics 130, 204, 205, 208, 209; History 208, 209
Hebrew	113b	Religious Studies 112
Italian	201	History 232; Italian 230
Japanese	202	Fine Arts 253, 254; History 249; Political Science 214; Religious Studies 246, 247
Latin	104	Latin 201, 202, 206, 220; Classics 146, 206, 212, 213, History 210
Portuguese	200	Portuguese 221, 222; African American Studies 264; History 264
Russian	204	History 237, 238; Political Science 212; Sociology 273
Spanish	104	Spanish 203, 221, 223; African American Studies 258, 259; History 258, 259

International Component Option 2. Full-time study in the fall or spring semester at one of the following programs: Classical Studies in Rome, Vanderbilt in England, Vanderbilt in France, Vanderbilt in Germany, Vanderbilt in Italy, Vanderbilt in Spain, or one of the Vanderbilt Programs in Argentina, Australia, Brazil, Chile, the People's Republic of China, the Republic of China, the Dominican Republic, Israel, Japan, and Russia.

International Component Option 3. Two courses taught in English that survey the traditions and cultural achievements of one of the following six areas. Both courses must be taken in the same area.

Approved courses for 2000/2001 are as follows:

Africa: Two courses from African American Studies 254, History 254, Music (MUSL) 171, Political Science 219, or Sociology 275

Early Civilization: Anthropology 103, 104, 245; Fine Arts 245

Classical Civilization: Two courses from Classics 130, 146, 208, 209, 210, 212, or 213, or Philosophy 210, except that 130 cannot be paired with 208 or 209

Middle Ages: Two courses from History 212, 213; Philosophy 211

East Asia: Two courses from History 157; Music (MUSL) 170; Religious Studies 130

European History and Civilization: Two courses from History 100 or 115W (Ideas and Culture of Western Civilization to 1700), 101 or 115W (Ideas and Culture of Western Civilization since 1700)

Latin America: Two courses from Anthropology 210; History 160, 161; Latin American Studies 201, 234; Political Science 217; Sociology 277; Spanish/Portuguese 293

Humanities (9 hours)

Courses in the humanities seek to improve the student's understanding of the traditions of human thought and art, of the relationships among the various subjects in the humanities, and of the importance of humanistic concerns to the daily lives of all thoughtful persons. Nine hours of course work chosen from the approved list meet this requirement. Courses must be completed in more than one department. Crosslisted courses may not be used to defeat this rule.

Approved courses for 2000/2001 are as follows:

African American Studies 114

Anthropology 130

Classics 115W (The Good Life), 115W (The Intellectual Crisis of Athens), 130, 146, 150, 175, 204, 205, 206, 210

Communication Studies 210, 222

Comparative Literature 106W, 107W, 108W, 215, 237

English 104W, 105W, 106W, 109W, 112W, 118W

Fine Arts 110–111, 130, 204, 205, 206, 240, 241

French 220

German 115W (Pioneers in Literary Modernism: Brecht, Kafka, and Rilke), 171–172, 221–222

Greek 216

History 180

Honors 181, 181W (open to College Scholars only)

Humanities 105W, 106W, 107W, 108W, 140, 141, 150, 151, 156, 175, 215,

237, 293
 Interdisciplinary Studies 201
 Music (MUSL) 115W (Music and Modernism), 115W (Shakespeare and Music), 140, 141, 160, 183, 200
 Philosophy 100, 100W, 105, 115W (Concepts of God), 210, 211
 Political Science 103
 Portuguese 293
 Religious Studies 106, 107, 108, 109, 110W, 112, 113, 114, 125, 130, 131, 132, 140, 180, 205
 Russian 171–172, 221–222
 Spanish 203, 293
 Theatre 100, 115W (Criticism of Drama), 201–202, 203
 Women's Studies 125, 150, 239

Natural Science (11 hours)

The natural sciences study entities, processes, and relations in the natural world. Courses in this area seek to improve the student's understanding of the basic principles that order natural phenomena, of the way these principles apply to various fields of knowledge and to technical developments, and of science itself as a way of examining and viewing the world. This requirement must be completed in more than one department (Physics and Astronomy are here considered to be different departments).

Basic Science (8 hours).

The goal of the Basic Science requirement is to give students sufficient foundation in science to enable them to (a) grasp some of the fundamental principles that order natural phenomena; (b) appreciate the scope, accuracy, and quantitative precision of scientific theories; and (c) understand the parts played by observation and experiment, deduction, imagination, accident, and influences from the larger society in the development of scientific theories.

Two 4-hour courses including laboratory or three lecture courses meet this requirement. Approved courses for 2000/2001 are as follows:

Astronomy 101, 102, 105, 115 (Galaxies and Cosmologies), 115 (Birth, Life, and Death of Stars)
 Biological Sciences 100, 110a–110b, 111a–111b, 218
 Biology 100, 129
 Chemistry 101a–101b, 102a and 104a, 102b and 104b, 103a–103b
 Geology 101, 102, 103, 104
 Honors 185, 185a–185b (open to College Scholars only)
 Physics 110a–110b, 111a–111b, 116a–116b, 117a–117b, 121a–121b

Science and the World (3 hours).

The objective of this requirement is to introduce students to scientific or technical knowledge and to relate that knowledge to the broader context of the world. Courses meeting this requirement are devoted to both (a) helping students comprehend how scientific knowledge advances and is cumulative, how new theories refute or supersede old ones, what scientific

research can and cannot do; and (b) examining the effects of scientific knowledge and technology on human beings by showing the importance of science in our culture and exploring the historical effects of scientific theories and discoveries. Any course from the following approved list for 2000/2001 meets this requirement.

- Anthropology 106
- Astronomy 115 (Planetary Systems and the Search for Life in the Universe), 130
- Biological Sciences 105, 115 (Biotechnology and the New GenEthics), 249, 273
- Biology 105, 115 (Biological Clocks and Human Behavior or Conservation Ecology)
- Geology 100, 115 (Controversies in the Geosciences or The Meaning of Fossils and the Age of the Earth), 150, 201
- History 201–202, 204
- Honors 182 (open to College Scholars only)
- Molecular Biology 115 (Molecular Biology of AIDS), 190, 249, 273
- Philosophy 244
- Physics 101, 108, 115W (Lasers)
- Religious Studies 202
- Science, Technology, and Humanities 101, 115W (Nature of Discovery), 190, 203, 205, 208
- Sociology 115 (Environment and Society)

Social Science (6 hours)

The social sciences seek to understand human beings and their relation to the diverse structures and institutions of their social environment. The social sciences study subjects ranging from the individual to the primary group (such as the family), through more complex groups (religious, social, economic, and other institutional forms), to the political affiliations of modern states and the framework of an international order. Six hours of course work chosen from the approved list, and in more than one department, meet this requirement. Crosslisted courses may not be used to defeat this rule.

Approved courses for 2000/2001 are as follows:

- Anthropology 101, 102, 103, 104
- Economics 100, 115 (Price System and Business Fluctuations)
- Honors 183 (open to College Scholars only)
- Linguistics 200, 202
- Political Science 100, 101, 102, 150
- Psychology 101, 115 (General Psychology—not 115a)
- Sociology 101, 102, 103, 202, 237

The College Program, the Major, and the Optional Minor

Courses used to satisfy requirements of the College Program may also be used, with approval of the major or minor department, to satisfy requirements of the major or the optional minor.

Advanced Placement and Transfer Credit

In general, only courses taken in the College may be used to satisfy requirements of the College Program; but credit awarded to students through Advanced Placement Examinations, approved international examinations such as the International Baccalaureate, credit by examination, or transfer credit earned before admission to Vanderbilt may be used toward the satisfaction of these requirements.

Vanderbilt in England, Vanderbilt in Germany, and CIEE Programs

Courses offered by the Vanderbilt programs in England and Germany that are equivalent to College Program courses offered in Nashville may be used to satisfy the same College Program requirement as the equivalent College Program course. This provision also applies to courses offered by those programs sponsored by the Council on International Educational Exchange (CIEE), in which Vanderbilt participates. For a full listing of these programs, see the chapter "Additional Programs."

Area of Concentration

During the junior and senior years, much of the student's work is concentrated in one large unit of intellectually related courses. The program of concentration may be arranged through a single major, an interdisciplinary major, or a double major. Each of the three options is described below. A triple major may be declared with the approval of the Committee on Individual Programs.

The entire program of concentration for the junior and senior years should be planned with the major adviser before the beginning of the junior year. Changes in major, the addition of a second or third major, or changes in an interdisciplinary major must be filed with the College registrar. Normally, no change or addition may be made during the senior year.

Major Field

Under this plan, the student majors in one of the recognized fields. There shall not be fewer than 27 hours in the major field, but a given department may require up to 36 hours. Students may take more than the required number of hours in any major; any given department, however, may limit the total permissible hours in a discipline.

A grade point average of at least 2.000 is required in all courses counted toward the major. Each department determines whether courses numbered

below 200 count as part of a major; and courses numbered below 200 are counted in the calculation of averages. Departments may require work in related courses to be designated as part of the student's program of concentration.

Within the framework of these general requirements, each department has its own policies governing major work, which are published elsewhere in this catalog or otherwise available to students. Major fields available at present are listed at the beginning of this chapter.

Interdisciplinary Programs of Concentration

This plan permits students to contract for an individually designed program of concentration consisting of at least 48 hours of approved work. The program is constructed around a coherent academic purpose and may draw together the academic resources of a number of departments and schools. The program's purpose may include topical, period, or area studies. The student may be required to achieve a standard of proficiency in appropriately related areas such as foreign languages or mathematics in addition to the 48 hours constituting the program of concentration. Bachelor of Science candidates are normally required to take at least 32 of the 48 hours within the College, while Bachelor of Arts candidates remain bound by the usual limitations on professional hours. A student who wants to develop such a program should first discuss it with the Dean.

The student's contract for an interdisciplinary major is deemed to be a statement of required courses within a major discipline. Furthermore, because of the nature of interdisciplinary majors, all courses listed in this catalog as options within an interdisciplinary area and all courses that have previously been included in the student's contract are considered to be part of the major discipline. The student must achieve at least a 2.000 average in all work taken in these three categories.

This plan also permits students to major in one of the defined interdisciplinary programs listed below. There shall not be fewer than 36 hours in the major field, but a given program may require up to 48 hours. The student must achieve at least a 2.000 average in all work taken in the major.

African American Studies
American and Southern Studies
East Asian Studies
Economics and History
European Studies
French and European Studies
German Studies
Latin American and Iberian Studies
Neuroscience
Public Policy Studies
Russian and Eastern European Studies

Students may combine an interdisciplinary major with a major in one of the recognized fields listed at the beginning of this chapter. Upon approval of the Committee on Individual Programs and the student's adviser, (a) as many as 6 hours may be counted as part of both the interdisciplinary major and the second major, *or* (b) normally, no more than three introductory-level courses will be counted toward the interdisciplinary major.

Double and Triple Majors

This program permits a student to concentrate in two or three fields, which may or may not be intellectually related. With approval of the departments concerned, the student completes all of the requirements stipulated for the majors. Second majors may be approved from other schools for bachelor of science students. Triple majors require approval of the Committee on Individual Programs.

Optional Minors

A minor is a program within a recognized area of knowledge offering students more than a casual introduction to the area but less than a major in it. Although the completion of a minor is not a degree requirement, students may elect to complete the courses specified for one or more minors. A student who completes all designated courses in a minor with a grade point average of at least 2.000 will have the minor entered on the transcript at the time of graduation.

Minors may be combined with any departmental major or interdisciplinary major. Each minor must, however, include at least 15 credit hours that are not being counted toward any major. Courses may not be taken on a P/F basis if they are offered in the department of the minor or if they are being counted toward an interdisciplinary minor (see Academic Regulations).

Minors consist of a minimum of five courses of three or more credits each. Many minors require a greater number of hours and specific courses. When a minor is offered in a discipline that offers a major, only those courses that count toward the major may be counted toward the minor.

Students should refer to the appropriate sections of this catalog for specific requirements. Minors available at present are listed at the beginning of this chapter.

Students should declare their intention to pursue specific minors by completing forms available in the office of the registrar of the College. Departments and programs assign advisers to students who declare minors in their respective areas. *Students have the responsibility to know and satisfy all requirements for minors which they intend to complete.*

Additional Programs

1

College Scholars Program

Entering freshmen with outstanding academic records and freshmen who achieve academic distinction during their first semester at Vanderbilt are invited to participate in the College Scholars program. These students have the exclusive opportunity to pursue advanced scholarly work in honors seminars and enriched courses or independent-studies projects. They may earn the designation “Honors in the College of Arts and Science” on their diplomas.

To earn the designation, College Scholars must accumulate fifteen “honors points” by achieving the grade *B* or better in approved courses and projects. A maximum of thirteen of these honors points may be earned in honors seminars. Honors seminars in the humanities, natural sciences, and the social sciences serve toward satisfaction of College Program requirements in these areas. For a complete description of how honors points may be earned and a listing of honors seminars offered, see the entry “Honors” in alphabetical order under “Courses of Study.”

The College Scholars Center, available to all students in the program (at any time), includes a seminar room where many of the honors classes meet, study space, microcomputers, a small kitchen, and a collection of reference books. It provides space for study, special lectures, and informal exchanges among College Scholars.

College Scholars are not required—although many will choose—to earn Honors in the College of Arts and Science; all, however, may enroll in as many honors seminars as they want. To remain in good standing in the program, students must maintain a minimum grade point average of 3.000. Further information on the College Scholars program and Honors in the College of Arts and Science may be obtained from the office of the Dean.

Departmental Honors

To encourage individual development and independent study in a special field of interest, many departments of the College offer honors programs for selected, superior candidates. Students normally begin departmental honors work in the junior year, but exceptions may be made in the case of outstanding seniors. To qualify for consideration, students must have (a) attained a minimum grade point average of 3.000 in all work previously taken for credit and in the program of concentration, and (b) exhibited to the department(s) concerned such other evidence as may be required to indicate a capacity for independent study. Some departments require higher grade point averages

in the major. Formal admission is by the Dean's Office after election by the department(s) concerned, with the approval of the director of honors study, who supervises the program with the aid of the Committee on the Honors Program.

Provisions vary somewhat from department to department (see descriptions in the appropriate department sections of this catalog), but generally honors students are exempted from some normal junior and senior class work in their major fields in order to devote time to independent study under the supervision of a faculty adviser. Candidates are required to demonstrate some degree of originality and maturity in the methods of independent investigation, analysis, and criticism, and skill in the written presentation of independent work. This standard usually requires a senior thesis but may be satisfied, in departments that have gained approval of this procedure, by a series of briefer critical papers.

Departmental honors work culminates in an examination given in the second semester of the senior year. The examination shall be both oral and written except in departments where honors students must take all courses required of standard majors in addition to those required of honors students. These departments have the option of making the examination either *oral* or *both oral and written*. The examination shall be conducted by a committee with a majority of examiners who have not participated in the candidate's honors work. Where feasible, examiners from other institutions may be included. The examination shall cover the thesis and specific fields of the independent work and may, at the discretion of the department, include all of the major work. Successful candidates are awarded Honors or High Honors in their field, and this designation appears on their diplomas.

Senior Scholar Program

Under the Senior Scholar program students may spend the entire senior year pursuing projects of their own devising. A project shall result in a finished document that constitutes material evidence that the time has been profitably spent in terms of intellectual development. Senior Scholars have presented a broad variety of projects, including documentary films, novels, and research monographs.

Scholars work under the supervision of one or more faculty members, and the project is graded *Distinguished*, *Pass*, or *Fail*. Admission into the Senior Scholar program will normally waive major requirements for the degree. The program is directed by the Committee on Individual Programs. Juniors wanting to apply for this option may obtain further details from the Office of the Dean.

Area Studies Programs

The College sponsors six area studies programs: African American, American and Southern, East Asian, European, Latin American and Iberian, and

Slavic. Curricular offerings are rich enough that an undergraduate interdisciplinary program of concentration can be structured in the first five of these areas.

Exchange Program with Howard University

Through an agreement with Howard University in Washington, D.C., a limited number of undergraduates in the College may study at Howard for one semester (in exchange with Howard undergraduates who may spend a semester at Vanderbilt). This program is available to sophomores and juniors with an overall grade point average of 2.700 or a grade point average at this level in each of the two most recent semesters. Transfer credit is offered (see the first paragraph under Study Abroad).

Study Abroad

Vanderbilt's overseas programs are open to students in good academic, financial, and disciplinary standing, with an overall grade point average of 2.700 or better or a grade point average at this level in each of the two most recent semesters. Some programs require a higher grade point average (see descriptions below) and, with the exception of Vanderbilt's programs in France, Italy, and Spain, the host university or consortium must also approve the student's application to study abroad. Overseas programs controlled by Vanderbilt, either directly or through a consortium, offer direct credit toward the Vanderbilt degree. Hours earned in them are treated as if earned on the Nashville campus and serve to satisfy the residence requirement (see the chapter on Academic Regulations). Other overseas programs offer transfer credit. Information is available from the Study Abroad office, Furman 008.

Vanderbilt in France, Spain, Germany, Italy

Study programs at Aix-en-Provence in southern France, at Madrid in Spain, at Florence, Italy, and at Regensburg in Germany give undergraduates an opportunity to develop greater fluency in the French, Spanish, Italian, and German languages and to enrich their understanding of another culture by living for an extended period in Europe. Students are eligible to participate in the Italian, French, and Spanish programs after the freshman year and in the German program after the sophomore year.

Admission is selective. Participants are required to have sufficient facility in French, Spanish, or German to continue their studies and must have strong academic records indicative of serious educational purpose. Each of the programs provides up to 18 semester hours of direct credit toward the Bachelor of Arts or Bachelor of Science degree. If the student's area of concentration is such as to profit from study in France, Spain, or Germany, credits may be earned in the major. Students wishing to participate in the Italy program need not have prior knowledge of the language. However, they will be required to take an Italian language course while there. The program is par-

ticularly well-suited to students studying Italian and art history and will include field trips to regional sites.

Residence in France, Italy, and Spain may be for either the fall semester, the spring semester, or for the full academic year. Summer sessions are also available and offer up to 7 hours credit.

Residence abroad for students taking part in the German program is one year for those entering in the fall semester. For those entering in the spring semester, residence is for that semester only. The fall semester begins 1 September and extends to the middle of February. The spring semester extends from 1 March to the middle or end of July.

Vanderbilt in England

The Vanderbilt in England program at the University of Leeds is for an entire academic year (September to late June) or for the spring semester (late January to late June), and students enroll as juniors or seniors. The University of Leeds prefers a cumulative grade point average of 3.0, although applicants with a slightly lower grade point average will also be considered. Instruction is given through lectures, tutorials, and "practical classes," with credit usually applied to the student's major and/or other fields. Students may earn a full year of direct credit (30 semester hours) by enrolling in a full-year program of Leeds courses (120 units) or a semester of direct credit (15 semester hours) by enrolling in a full-semester program of Leeds courses (60 units).

The usual pattern of study at British universities involves a concentration in one main subject and one or more closely-related disciplines. Although Vanderbilt students studying at Vanderbilt in England usually complete a significant amount of work toward their majors, they also take courses in a wide variety of fields.

Humanities in London

Humanities in London is a summer program of the College of Arts and Science held in the facilities of the University of London. It emphasizes the literature, history, and art of Great Britain. Students may earn up to 6 hours of direct credit in this program.

International Studies in London

International Studies in London is a program of the College of Arts and Science emphasizing the social, economic, business, and political aspects of contemporary international problems. It is held in the facilities of the University of London. Students may earn up to 6 hours of direct credit in this summer program.

Intercollegiate Center for Classical Studies in Rome

Vanderbilt University is one of thirty-seven universities and colleges forming the Intercollegiate Center for Classical Studies in Rome. The center is

designed to promote the study of Greek and Latin classics, and is unique in that it is the only such undergraduate intercollegiate institution located in one of the main centers of the ancient world. The essential theory on which the center is based is that some part of all serious undergraduate education in the classics can and should be conducted in the homeland of the classical cultures. Admission is selective and open only to majors in the departments of Classical Studies and Fine Arts who have an academic average of *B* or better.

The Department of Classical Studies and the Department of Fine Arts recommend outstanding students for study at the center, normally for a period of one semester, although a second semester is permitted. The program consists of courses in Latin literature, Greek literature, Roman history, classical archaeology, art history, and Italian language, for a total of 16 hours of credit per semester. Total enrollment at the center is limited to forty students, with a faculty selected from institutions in this country. A portion of each term is devoted to on-site study in Italy, Sicily, and Greece.

The fee for this program includes regular Vanderbilt tuition and additional charges described in the handbook of the Rome center, available in the Department of Classical Studies. Direct credit is offered.

A&S

CET Academic Programs

CET sponsors programs in which Vanderbilt participates in China. These programs concentrate on the language, literature, culture, history, and politics of China. Direct credit is offered for work in these programs.

Vanderbilt participates in CET programs at three universities in China. Undergraduates may study for a summer or a semester at the Beijing Institute of Technology or the Harbin Institute of Technology, earning up to 18 hours of credit or 9 hours of credit in the summer; or for a summer at the Johns Hopkins-Nanjing Center for Chinese and American Studies at Nanjing University.

For more information, see the CET Web site at www.cetacademicprograms.com.

Council on International Educational Exchange

The Council on International Educational Exchange (CIEE) sponsors programs in which Vanderbilt participates in Argentina, Australia, Brazil, Chile, the People's Republic of China, the Republic of China on Taiwan, the Dominican Republic, Japan, and Russia. These programs concentrate on the language, literature, culture, history, politics, and economics of the respective countries. Direct credit is offered for work in these programs.

Vanderbilt participates in CIEE programs at three universities in China — Peking University, Fudan University in Shanghai, and the National Chengchi University in Taipei, Taiwan—and one university in Japan, Sophia University in Tokyo.

Vanderbilt also participates in four CIEE programs in Latin America—in Buenos Aires, Argentina, at the Facultad Latinoamericana de Ciencias Sociales, Universidad de Buenos Aires; in Brazil, at the Universidade de São Paulo; in Chile at the Universidad de Chile and the Pontificia Universidad Católica de Chile in Santiago; and in the Dominican Republic, at the Pontificia Universidad Católica Madre y Maestra in Santiago.

Students may also attend through CIEE Murdoch University in Perth, Australia, and St. Petersburg State University in St. Petersburg, Russia.

Since details of each program differ regarding calendar, semesters available, semester hours that can be earned, minimum grade point average required, language prerequisites, etc., students are encouraged to get more information about individual programs from the Study Abroad Office.

Vanderbilt Program in Israel

The Vanderbilt Program in Israel offers students an entire year (August to June) or the spring semester (February through June) at the Rothberg School for Overseas Students of the Hebrew University of Jerusalem, with opportunities to study in an international setting with a rich sense of history. Courses are taught primarily in English, although students with a good command of Hebrew are encouraged to study with Israeli students in classes taught in that language. Students in the one-year program must attend an intensive, eight-week Hebrew language course before the beginning of the academic year and take one course in Hebrew each semester; students enrolling for one semester must attend the intensive language course. Students applying for the full academic year must have a cumulative GPA of 3.0, while those applying for the spring only must meet a higher standard. Students earn direct credit.

Butler Institute for Study Abroad

Qualified Vanderbilt undergraduates can study in Australia and New Zealand for direct Vanderbilt credit through Butler Institute for Study Abroad for either the fall semester (late July to late November) or the spring semester (mid-February to early June). Students apply through Butler ISA, directly to the university abroad. In Australia, students may study at the University of Adelaide (Adelaide), Australian National University (Canberra), the University of Melbourne (Melbourne), Monash University (Melbourne), New South Wales University (Sydney), the University of Queensland (Brisbane), the University of Sydney (Sydney), the University of Western Australia (Perth) and in New Zealand at the University of Auckland, the University of Canterbury (Christchurch, South Island), or Victoria University (Kelburn, Wellington, North Island). Students may earn up to 15 credits per semester. A cumulative GPA of 2.75 is required by some of the Australian and New Zealand universities; others require a cumulative GPA of 3.0. For more information, see the Butler University/ISA Web site at www.butler.edu/isa.

Additional Options

Students interested in receiving transfer credit for overseas programs other than those sponsored by Vanderbilt apply to the Committee on Individual Programs. They must meet the same academic standards required for participation in Vanderbilt's overseas programs. Information is available from the Office of the Dean.

Pre-Professional Studies

Premedical Studies

Students interested in the study of medicine should plan their undergraduate programs in consultation with Thomas N. Oeltmann, Associate Professor of Medicine and Biochemistry, health professions adviser. There is no formal premedical program of courses in the College of Arts and Science or elsewhere at Vanderbilt. Each student should plan a program to meet individual needs. The program should include whatever courses may be necessary to meet medical school admission requirements, all courses required for the major, all College Program requirements, and elective options. Students may choose majors from the humanities, mathematics, the laboratory sciences, or the social sciences, and may elect to pursue a double major or an interdisciplinary program of concentration.

A student who plans to apply for admission to the Vanderbilt University School of Medicine may choose either of the following options:

1. A student may qualify for admission with either a B.A. or B.S. degree, whether completed in three years or in four. Minimum requirements for admission generally would be met by completing one year of English; Biological Sciences 110a–110b and 111a–111b, or Biology 100 and 119; Chemistry 102a–102b or 103a–103b, and 220a–220b; and Physics 116a–116b, 117a–117b, or 121a–121b (see the *Medical Center Catalog* for the official statement).

2. A student may qualify as a three-year student in the senior-in-absentia program (see the chapter on Academic Regulations).

Any student contemplating application to medical school should take at least a year of English, two years of chemistry including organic, a year and a half of biology, one year of physics, general psychology, and at least one semester of calculus. These courses, together with the College Program requirements, meet the admission requirements of most medical schools.

Early Acceptance to the Vanderbilt University School of Medicine

A limited number of Vanderbilt undergraduates may apply for and be accepted into the Vanderbilt University School of Medicine at the end of the sophomore year.

Dentistry

Students interested in pre dental studies should plan their undergraduate program in consultation with Thomas N. Oeltmann, Associate Professor of Medicine and Biochemistry, health professions adviser. There is no formal pre dental program of courses at Vanderbilt. Pre dental studies should include courses necessary to meet dental school admission requirements, all courses required for the major, all College Program requirements, and elective options. Students may choose majors from the humanities, mathematics, natural science, or the social sciences. They may also elect a double major or an interdisciplinary program of concentration.

A student may apply to dental school under the senior-in-absentia program (see Senior-in-Absentia) or apply for admission after three years of college work without a degree.

Interested students are urged to consult the directory, *Admission Requirements of U.S. and Canadian Dental Schools*, published by the American Association of Dental Schools, as a guide to planning their undergraduate programs.

Any student contemplating application to dental school should take at least a year of English, two years of chemistry including organic, a year and a half of biology, one year of physics, general psychology, and at least one semester of calculus. These courses, together with the College Program requirements, meet admission requirements of most dental schools.

Nursing

Students interested in developing a program that could lead to a Master of Science in Nursing are advised to consult the Office of Admissions in the School of Nursing. For further information on pre-nursing studies, see the chapter on Special Programs for Undergraduates near the front of this catalog.

Hearing and Speech Sciences

The Division of Hearing and Speech Sciences at Vanderbilt offers a core of undergraduate courses suggested as preparation for graduate work in the field: Hearing and Speech Sciences 205, 206, and 217. These courses provide an introduction to human communication and its disorders that may be of interest to liberal arts majors. Further information is available in the *Graduate School Catalog* and from Professor Russell J. Love at the Bill Wilkerson Hearing and Speech Center.

Architecture

Undergraduate students in the College expecting to pursue architecture at the graduate level should complete at least one year of analytic geometry and calculus and one year of physics. Students may select any major but would want to include courses that emphasize a broad sense of art and architectural

history, including courses in studio art. Before applying to specific schools of architecture, they would develop a portfolio of creative work. Further information is available from Professor Michael L. Aurbach of the Department of Fine Arts.

Engineering

Undergraduate students in the College expecting to pursue engineering at the graduate level should normally major in a natural science or mathematics and, at a minimum, should complete two years of calculus or its equivalent, one year each of chemistry and physics, and at least an additional year of a natural science or mathematics. A minimum of one year of computer science is highly desirable. Students should seek specific information concerning admission from the engineering school of their choice as early as possible, preferably by the end of the sophomore year, to assure optimum preparation for entry into that school. Standards for admission vary, but usually a B average or better is required.

Law

There is no formal program of prelaw studies at Vanderbilt. Most law schools have no specific requirements for a prelaw curriculum but place great emphasis on the development of the student's ability to read and comprehend accurately, thoroughly, and rapidly; to speak and write clearly and correctly; to think precisely; and to analyze complex situations and weigh and appraise their several elements. The development of analytical skills and of mature study habits is vital. A broad cultural background is important—since law touches life at every point, every subject in the college curriculum may bear on the lawyer's work. Students interested in the study of law should plan their undergraduate programs in consultation with Associate Professor Kassian A. Kovalcheck Jr., prelaw adviser.

Journalism and Science Writing

Undergraduate students interested in pre-professional preparation in journalism and in science writing and communication should enroll in courses that develop written and verbal communications skills. In addition to the availability of departmental majors, students may design individual majors with an emphasis on writing through the Committee on Individual Programs. Students interested in developing individual pre-professional programs in journalism or science writing and communication should plan their undergraduate programs in consultation with Associate Dean Paul Elledge.

Management

Joint Five-Year Baccalaureate–M.B.A. Program. By combining one and one-half years of study in the Owen School with three and one-half years in Vanderbilt's College of Arts and Science, students may obtain both the bac-

calaureate degree and the M.B.A. degree in five years—the baccalaureate from the College at the end of the fourth year under the senior-in-absentia program, and the M.B.A. from the Owen School after the fifth.

Students may major in any subject in the College.

Students must apply to the Owen School for admission to the five-year program during their junior year. Students are subject to normal Owen School admission requirements, and no student is assured of admission to the Owen School by virtue of completion of the requirements listed above. Students who are accepted will be registered in the Owen School for three semesters (a minimum of 48 hours). Up to 16 hours of Owen School courses approved by the College may be counted toward completion of the undergraduate degree. Upon acceptance to the Owen School, students should contact the Office of Student Services for an advising appointment. The Owen School Registrar will review undergraduate courses and arrange for transfer of those credits toward the student's M.B.A. degree.

Financial Aid. The scholarship or other financial aid commitment of the College of Arts and Science will not be continued automatically beyond the seventh semester for students enrolled in the joint program. Eighth semester scholarships or other financial aid are the responsibility of the Owen School. Prior to their enrollment in the joint program, the Owen School will advise students of the level of financial support, if any, to be provided during the eighth and subsequent semesters. This ensures that an eighth semester scholarship from the College is protected for the student until a final decision is made to enroll in the Owen School.

Planning for the Program. Students interested in this program should consult William Damon or Malcolm Getz in the Department of Economics, or the Owen Admissions Office, for advice on planning undergraduate studies to meet the program's requirements.

Teacher Education

Details will be found in Licensure for Teaching in the Peabody College section of this catalog.

Honors

1

Founder's Medal

The Founder's Medal, signifying first honors, was endowed by Commodore Cornelius Vanderbilt as one of his gifts to the University. The recipient is named by the Dean after consideration of faculty recommendations and overall academic achievements, as well as grade point averages of the year's highest ranking *summa cum laude* graduates.

Academic Honors Designation

Honors noted on diplomas and published in the *Commencement Program* are earned as follows:

Students who earn grade point averages of 3.250 or higher will graduate *cum laude*; 3.500 or better, *magna cum laude*; 3.750 or better, *summa cum laude*.

Graduates who complete the requirements of the College Scholars program (see Additional Programs) are awarded "Honors in the College of Arts and Science," and this designation appears on their diplomas. Candidates successfully completing departmental honors programs are awarded Honors or High Honors in their major field, and this designation appears on their diploma.

Dean's List

The Dean's List recognizes outstanding academic performance in a semester. Students are named to the Dean's List when they earn a grade point average of at least 3.500 while carrying 12 or more graded hours with no grade of F and no temporary or missing grades.

Phi Beta Kappa

The Alpha Chapter of the Phi Beta Kappa in the state of Tennessee honors scholarly attainments in the liberal arts and sciences and annually elects seniors and juniors to membership during the spring semester.

Seniors who have completed at least 60 semester hours in the College of Arts and Science and earned a grade point average of 3.600 or better are eligible for consideration, as are juniors with a grade point average of 3.850 who have completed at least 70 semester hours at Vanderbilt.

Attainment of the minimum average is not a guarantee of election. Membership is based on broad cultural interests and scholarly achievements. The following guidelines normally apply: at least 90 hours of the student's total program must be liberal, rather than applied or professional, in nature; and

the breadth of a candidate's program, as shown by the number and variety of courses taken outside the major, is considered. Grades earned in applied or professional work are not counted in computing the grade point average. Candidates are expected to have satisfied both of the upper level options in Mathematical Reasoning/Foreign Language of the College Program in Liberal Education. These mathematics and language courses cannot be taken on a P/F basis.

To be considered for election in the junior year, students should have completed all of the CPLE requirements by the end of the junior year, including both of the upper level options in mathematical reasoning/foreign language. Students who go abroad on foreign study programs in their junior year are not eligible for election as juniors, but are considered in due course during their senior year.

In no event may the total number of persons elected from any senior class exceed 10 percent of the class, and from any junior class exceed six persons.

Honor Societies for Freshmen

Freshmen who earn a grade point average of 3.500 or better for their first semester are eligible for membership in the Vanderbilt chapters of Phi Eta Sigma and Alpha Lambda Delta.

Other Awards and Prizes

MORRIS H. BERNSTEIN JR. PRIZE IN LATIN DECLAMATION. Established in 1983 by William H. Bernstein (B.A. 1983) in memory of his father (B.A. 1943, M.D. 1946). Awarded after a competition, open to any undergraduate who has studied two semesters of Latin, in which participants deliver from memory Latin passages selected to reflect classical ideals.

FOUNDER'S MEDAL FOR ORATORY. Awarded to the senior who has demonstrated the highest standard in public speaking.

FRENCH GOVERNMENT PRIZES. Awarded for excellence in French studies.

EDWIN S. GARDNER MEMORIAL PRIZE FOR EXCELLENCE IN FRENCH. Awarded to a graduating senior who majored in French.

ALEXANDER HEARD AWARD. Presented annually to the outstanding senior political science major.

AVERY LEISERSON AWARD. Presented for the best research paper or essay written by an undergraduate in a political science course.

MERRILL MOORE AWARD. Endowed in 1961 by Mrs. Merrill Moore, Squantum, Massachusetts, in memory of her husband. Presented to a graduating senior or a student entering the junior or senior class, selected by the Department of English on the basis of "literary promise and the psychological or practical usefulness of the award" to the student.

DANA W. NANCE PRIZE FOR EXCELLENCE IN A PREMEDICAL CURRICULUM. Endowed in 1985 by the family and friends of Dana W. Nance (B.A. 1925, M.D. 1929). Awarded annually to a student who has demonstrated the perseverance to succeed in a premedical curriculum and who embodies the attributes of a caring physician.

JUM C. NUNNALLY AWARD. Established in 1987 in memory of this professor of psychol-

ogy from 1960 to 1982. Presented to a graduating senior in the honors program of the Department of Psychology for the best research project.

DONALD E. PEARSON AWARD. Presented annually to a graduating senior in chemistry adjudged the most distinguished in undergraduate research in chemistry.

PHI BETA KAPPA FRESHMAN SEMINAR AWARD. Awarded annually to students who have done outstanding creative work in freshman seminars.

AWARD FOR OUTSTANDING RESEARCH IN MOLECULAR BIOLOGY. Presented to a senior in molecular biology for outstanding research performed as part of the major program in molecular biology.

OUTSTANDING SENIOR IN CHEMISTRY AWARD. Presented annually to that graduating senior in chemistry who, in the opinion of the faculty of the Department of Chemistry, shows most promise of an outstanding career.

HENRY LEE SWINT PRIZE. Awarded since 1978 for the best essay in history.

D. STANLEY AND ANN T. TARBELL PRIZE IN ORGANIC CHEMISTRY. Awarded annually to a graduating senior who has excelled in organic chemistry by earning the highest grades in courses or performing outstanding research in organic chemistry.

UNDERWOOD MEMORIAL AWARD. Endowed in 1961 by the late Newton Underwood in memory of his father, Judge Emory Marvin Underwood, long-time member of the Board of Trust. The cash award is given to the most deserving and most promising graduating senior or graduate student in physics.

SUSAN FORD WILTSHIRE PRIZE. Cosponsored by the Women's Studies Program and the Women's Faculty Organization, this award is given annually for the best undergraduate essay that deals with gender issues.

KATHARINE B. WOODWARD PRIZE. Awarded since 1943 and endowed in 1962 by Miss Katharine B. Woodward, Class of 1919, for excellence in Spanish studies.

MARGARET STONEWALL WOOLDRIDGE HAMBLET AWARD. Endowed in 1983 by Clement H. Hamblet in memory of his late wife, who began her art studies at Peabody College. The award is given to a graduating student of outstanding merit in studio art to enable the pursuit of his or her creative development through one year of extensive travel and further studies in studio art.

Academic Regulations

1

Honor System

All academic work at Vanderbilt is done under the Honor System. (See the chapter on Life at Vanderbilt.)

Class Attendance

Students are expected to attend all scheduled meetings of classes in which they are enrolled; they have an obligation to contribute to the academic performance of all students by full participation in the work of each class. At the beginning of the semester, instructors explain the policy regarding absences in each of their classes, and thereafter they report to the office of the Dean of the College the name of any student whose achievement in a course is being adversely affected by excessive absences. In such cases the Dean, in consultation with the instructor, takes appropriate action, which may include dropping the student from the class; students dropped after the deadline for withdrawal (see Period for Withdrawal) receive the grade *F*. Class attendance may be specified as a factor in determining the final grade in a course, and it cannot fail to influence the grade even when it is not considered explicitly.

The last day before and the first day after official holidays are considered to be the same as any other day on which classes are scheduled. Assignments are made for classes scheduled on these days, and tests may be given in them. Students should take this fact into account in making travel plans.

The faculty of the College of Arts and Science recognizes that occasions arise during the academic year that merit the excused absence of a student from a scheduled class or laboratory during which an examination, quiz, or other graded exercise is given. Examples include participation in sponsored University activities (e.g., debate team, varsity sports), observance of officially designated religious holidays, serious personal problems (e.g., serious illness, death of a member of the student's family), and matters relating to the student's academic training (e.g., graduate or professional school interviews). While determination of the merit of a case is left primarily to the discretion of the individual instructor, conflicts arising from personal travel plans or social obligations do not qualify as excused absences.

The primary determination of whether a student's absence from class occurs for a reason that warrants rescheduling a graded exercise for that student is left to the judgment of the individual instructor. A standard of reasonableness should apply in making such judgments.

Except in cases of true emergency, student petitions for making up missed graded exercises must be made prior to the missed class, preferably at the beginning of the semester or at the earliest time thereafter when the need to

be absent is known to the student. Faculty members retain discretion in the form and timing of makeup exercises or in devising other strategies for accommodating students.

The faculty of the College authorizes the Office of the Dean to resolve through arbitration any cases that cannot be directly resolved between students and their instructors.

Deficiency in Foreign Language

Students who, because of special ability and achievement, are admitted to the College without the normally required two years of one foreign language in high school must enroll in a foreign language course during their first semester and must remain continuously enrolled until they successfully complete a full year of one foreign language. They must complete this requirement by the end of their fourth semester in the College.

Normal Course Load

Each semester regular tuition is charged on the basis of a normal course load of 12 to 18 semester hours. No more than 18 or fewer than 12 hours may be taken in any one semester without authorization of the Administrative Committee or the Dean. (There is an extra charge for more than 18 hours at the current hourly rate.) Students permitted to take fewer than 12 hours are placed on probation, unless their light load is necessary because of outside employment or illness. During the summer session, there is no minimum course load. Summer loads exceeding 14 hours must be authorized by the Dean.

Auditing

Regularly enrolled Arts and Science students who want to audit courses in any of the undergraduate schools of the University must obtain the oral consent of the instructor to attend the class but do not register for the course. No record is kept of the audit. Regular students may audit classes each semester free of charge.

No-Credit Courses

Students may want to take elsewhere in the University courses that are not creditable toward the bachelor's degree. They may do so on a no-credit basis, attending classes, doing all the work of the course, and receiving a grade that is recorded on the transcript with a notation that it does not count toward the degree.

No-credit courses count in computation of the student's academic load and in computation of tuition, but not in computation of the grade point average. They also do not count toward the attainment of class standing.

P/F Course Provision

Students may elect to take some courses in which they can receive the grade *P* (Pass). This grade is entered for a student enrolled under the P/F option who is awarded the grade *D–* or higher. The record of a student enrolled under this option who fails the course will show an *F*.

To be eligible for the P/F option, the student must have been admitted to sophomore, junior, or senior standing and must not be on academic probation. No student may offer toward the degree more than 18 hours graded *P*. No more than one course per term may be taken on a P/F basis. The P/F option does not apply to courses in the following categories:

1. Courses counted toward College Program requirements;
2. For students with a single or double major, courses in the major field(s) or other courses that may be counted toward the major(s);
3. For students with an interdisciplinary major, courses listed in the student's plan of study;
4. For students planning an optional minor, courses in the minor or those counting toward an interdisciplinary minor;
5. Courses taken previously, whether for a regular grade *A* through *F* or under the P/F option;
6. Courses that have been specifically excluded from the P/F option. Such courses are designated in the *Schedule of Courses*.

Students taking a course on a P/F basis must be enrolled for at least 12 hours on a regularly graded basis. If a student drops a course and falls below 12 graded hours, the P/F course is converted automatically to a regularly graded basis. A small number of courses are offered in which only the grades P/F are possible (Political Science 280a, Interdisciplinary Studies 280a–c, and certain courses leading to licensure for teaching). These courses cannot be converted to a regularly graded basis.

A graduating senior who has permission to take fewer than 12 hours on a graded basis may take one course on a P/F basis in addition to the courses required for graduation. If the student does not graduate at the end of that semester, the grade *P* is automatically converted to the grade actually earned.

The limit of 18 hours on grades of *P* applies to all credit of this type, including any received in another school of the University, in an affiliated institution, or by transfer. Candidates for teacher licensure should be aware that part of the Teacher Education program is offered only with the grade *P* or *F*. These candidates should, therefore, plan their programs so that the total hours of *P*, including student teaching, will not exceed 18.

The grade *P* is not counted in the grade point average nor used in the determination of honors. The grade earned under the P/F option is included in the calculation of grade point average just as it would be when earned on a regularly graded basis.

All P/F students are expected to meet normal course requirements (e.g., reports, papers, examinations, laboratory attendance) and are graded in the normal way. At the end of the semester, students enrolled on a P/F basis are awarded a regular grade. Any grade of *D–* or above is converted in the Student

Records System to a *P*, while other grades remain as awarded. A student taking a course on a P/F basis must meet the course prerequisites as set forth in this catalog.

Students register on a P/F basis through OASIS within the change period of registration during the first week of classes (see Registration). After this, they may change from a P/F basis to a regularly graded basis—but not vice versa—until the end of the eighth week of classes. These deadlines are published in the calendar. When a student wants to complete a major or a minor in a field in which the grade *P* has been received, the registrar converts this grade to the regular grade originally earned.

Undergraduate Enrollment for Graduate Credit

A qualified Vanderbilt University senior undergraduate may enroll in courses approved for graduate credit and receive credit that, upon the student's admission to the Vanderbilt Graduate School, may be applicable toward a graduate degree. Vanderbilt cannot guarantee that another graduate school will grant credit for such courses. The principles governing this option are as follows:

1. Work taken under this option is limited to those 200- and 300-level courses approved for graduate credit and listed as such in the *Graduate School Catalog*, excluding thesis and dissertation research courses and similar individual research and readings courses.

2. Such work must be in excess of that required for the bachelor's degree.

3. The student must, at the time of registration, have a *B* average in all prior work to be counted toward the bachelor's degree, or a *B* average in all prior work to be counted toward the undergraduate major, or a *B* average in the preceding two semesters.

4. The total course load, graduate and undergraduate courses, must not exceed 15 hours in any semester.

5. Undergraduate students wanting to count for graduate credit courses taken under this option must consult the instructor of each course and must, at the time of registration, declare their intention on forms available at the Graduate School office.

6. Permission for Vanderbilt undergraduates to enroll in graduate courses does not constitute a commitment on the part of any department to accept the student as a graduate student in the future.

7. An undergraduate student exercising this option is treated as a graduate student with regard to class requirements and grading standards.

Interested students should consult the office of the Dean of the Graduate School before attempting to register for graduate courses under this option.

Any student wanting to take a 300-level course, whether under this option or not, must obtain the written approval of the academic adviser, the instructor of the course, and the Dean of the Graduate School. Registration forms for undergraduate Arts and Science students who want to take a 300-level course are available in the College office.

Independent Study and Directed Study Courses

Independent study and directed study courses are listed in the *Schedule of Courses* with the activity-type symbols IND and DIR respectively, and are intended for students in their junior and senior years. Juniors or seniors wanting to take such courses must use the following procedure:

1. Obtain permission to enroll from the instructor of their choice. Consult the instructor prior to the course request period of registration for the semester in which the study is to be undertaken.

2. Register for the course.

3. Make a written study plan detailing the nature of the project and the amount of credit and have it approved by the instructor and the department chair (or the chair's designee) by the tenth day after classes begin.

Students who have not met these requirements are reported on the tenth-day enrollment report as "registered but not attending" and are dropped from the course.

Students may not repeat independent study or directed study courses for grade replacement. Independent study courses in other schools approved by the College Curriculum Committee may be taken for credit if the project is approved by the Committee on Individual Programs.

Limitation on Professional Hours

Candidates for the Bachelor of Arts degree may take no more than 6 hours of approved professional work of all types within the 120 hours required for the degree. Exceptions to this rule are made for bona fide candidates for teacher licensure (who may offer up to 12 hours).

Students in the Bachelor of Science degree program may include professional courses in excess of the 6 professional hours allowed under the B.A. program, provided these courses are also approved for B.A. students as professional hours. They may also take a second major or an optional minor from outside the College of Arts and Science.

Duplication of Course Content

It is the responsibility of the individual student to avoid duplication in whole or in part of the content of any course counting toward the degree. Such duplication may result in the withdrawal of credit.

Registration

Students register for courses using a program installed on the University's central academic computer. Students who learn and follow the procedure outlined below will find that the system is quick and convenient. Those having a microcomputer with a modem or a network link that allows them to connect to the central computer can register from their dormitory rooms; others may register by using the computers in the Microcomputer Laboratories or the terminals in the Computer Center.

Students are asked to plan their immediate and long-range educational programs with their faculty advisers before registering and to consult their advisers when they make changes in their registration.

Students not meeting specified tuition payment deadlines are not permitted to register. See the chapter on Financial Information for details.

Before registering, students should check their own records carefully with respect to the following items:

1. College Program requirements;
2. Major requirements;
3. Requirements of any optional minor(s) sought;
4. Course prerequisites;
5. Professional hour limit, if the student is a candidate for the B.A. degree (see Limitation on Professional Hours).

Course Request Period

Registration material is mailed to continuing students at their school address on a date in the preceding semester announced in the official Vanderbilt University Calendar, in a simplified calendar issued by the registrar of the College, and in the student newspaper, the *Hustler*. During a period of about three weeks, these students register for courses, sections, and meeting times through OASIS, the computer-assisted registration system that controls all undergraduate courses. By a specified date, students must have registered for a full load of courses (minimum of 12 hours) in order to avoid a \$30 late registration fee. But continuing students are able to make changes in their schedules without charge after this deadline.

New students are also given the opportunity to register during the course request period. In the summer, freshmen attending summer orientation in June see advisers and then register for fall courses using OASIS. Freshmen not attending summer orientation or entering for the spring semester are sent registration material by mail and may send their course choices by mail to the registrar of the College or give their choices to a faculty adviser by telephone. Re-admitted students can access OASIS on the University network through a modem or send their course requests to the registrar of the College.

Because registration during the course request period is of great value to students in obtaining desired courses and sections and to department chairs in planning class sizes and adjusting number of sections to student demand, students are urged to register at that time. Those who do not may lose valuable time and will find their choice of courses limited.

At the end of the course request period no further registration activity is permitted for a period in which deans and department chairs analyze enrollment data and make adjustments in course and section offerings as needed. Every effort is made to enroll students in the courses and sections requested, but the registrar reserves the right to move students from over-enrolled sections or to “bump” them from over-enrolled courses.

Registration Period

This period begins with postal notification of students concerning the status of their registration. During registration period students may access OASIS any number of times to make changes in their registration or to register late. (Students who register for the first time during this period are charged a \$30 late registration fee.) Courses and sections are available on a first come, first served basis depending upon seat availability. Students “bumped” from an over-enrolled course have first access to the system during this period, then non-registered students, then all other students.

Before classes begin, all registered undergraduate students must confirm enrollment for the semester by clearing their student account of all charges associated with the beginning of the semester. Tuition, fees, and all other charges for undergraduates are due by specific dates before the beginning of the semester. These dates are specified in the *University Calendar* and the *Undergraduate Catalog* (under “Financial Information” in the front matter) and on the billing statement for the coming semester. The registration of students who miss the payment deadline will be cancelled unless they have made payment arrangements with the Office of Student Accounts.

Students entitled to make up final examinations missed at the end of the preceding semester are responsible for contacting the Office of the Dean (311 Kirkland Hall) before the second day of classes to schedule those makeup examinations.

Registration period ends at 4:00 p.m. on the day before the first day of classes.

Change Period

Beginning on the second day of classes and extending through the sixth day of classes students may use OASIS to fine-tune their registrations and may declare P/F status in a course. The sixth day of classes is the deadline for students to add a course, change a course, change sections in a course, drop a course without its appearing on their transcripts, or declare P/F status in a course.

Waiting lists are available for most closed courses through the fifth day of classes. At 4:00 p.m. on that day waiting lists are cancelled. Students unable to secure a seat in a closed course make changes on the sixth day of classes on a first come, first served basis depending upon the availability of seats.

Any change not handled by OASIS (e.g., courses in the Owen School or Nursing) must be made by the student using a Change of Course card. The student must file this card with the office of the College Registrar by the end of the change period for the change to be official.

Period for Withdrawal or Change from P/ F Status

After the change period, and extending to the end of the eighth week of classes, a course may be dropped with the consent of the student’s adviser. During the same period students may change their status from P/F to regularly graded—but not vice versa—in a course.

These changes must be made with a Change of Course card, which the student must submit to the College Registrar. After the end of the eighth week, withdrawal is possible only in the most extraordinary circumstances, such as illness or unusual personal or family problems. In every case the student, the instructor, and the Dean must agree that late withdrawal is justified by the circumstances. Cases in which agreement is not possible are decided by the Administrative Committee. After the end of the eighth week, change from P/F to regularly graded status is not possible.

Students who withdraw from a course after the change period receive the grade *W* (withdrawal). This grade is not used in the computation of the grade point average or class rank. Students who default in a course without officially dropping it receive the grade *F*.

Minimum Graded Hours

A course may not be dropped without authorization of the Administrative Committee or the Dean if the student is left with a course load of fewer than 12 hours on a regularly graded basis.

Late Registration Fee

A fee is charged for late registration. See the chapter on Financial Information for details.

Mid-Semester Progress Reports

At the end of the seventh week of each semester, instructors assess the progress of all students in their classes and report those whose work at that point is deficient or whose work is being harmed by excessive absences. Grades to be reported are *C-*, *D+*, *D*, *D-*, *F*, and *I* (for incomplete, meaning that some work due by that point has not been submitted). Instructors may combine with one of these grades or assign separately a notation of excessive absences from a class. Reports of these deficiencies are sent to students, their faculty advisers, and (for students who are dependents of their parents or have authorized such reports) their parents. Grades given at mid-semester do not become part of the permanent record but are intended to warn students about performance judged unsatisfactory.

Dead Week

No examinations of any type—including quizzes, hour examinations, and portions of final examinations—are allowed during the last week of classes. But the Administrative Committee may grant special permission to the instructor in charge of a course to give laboratory examinations during the last regular laboratory period of the last week of classes. The last week of classes is defined as the last seven calendar days preceding the end of classes. If, for example, classes end on Tuesday, then the “dead week” begins the preceding Wednesday and lasts through Tuesday. Students should notify the Dean’s Office of any violation.

Examinations

Each department establishes procedures for evaluating student performance, and normally the method of evaluation is the responsibility of the course instructor. At the beginning of the semester instructors should clearly state the evaluation procedures, including types of examinations, to be used in their courses. Students should have adequate opportunity during the semester to demonstrate their knowledge of the subject matter and should be given an indication of their progress in the course prior to the deadline for dropping courses. Instructors are cautioned against placing excessive weight on the final examination when determining a student's grade in a course.

The primary and alternate final examination schedules issued each semester allow two hours for a final examination in each course. Each in-class final examination must be given at the time indicated on the primary schedule. The alternate schedule is used only if the instructor decides to give an in-class examination at two times. The final examination period lasts for about a week and a half.

Alternatives to the standard in-class final examination are permitted at the instructor's discretion. Some examples are take-home examinations, oral examinations, and term papers; there need not be a final examination if adequate evaluation procedures have been used during the term. A take-home or oral examination should make approximately the same demand on a student's time as an in-class examination and should be conducted during the final examination period. A take-home examination must be distributed at the last regular class meeting and must be completed by either the primary or the alternate examination date, whichever is later.

All examinations are conducted under the Honor System.

The instructor's record of grades given during a course and any final examination papers not returned to students must be kept on file by the instructor for the first month of the semester following the conclusion of the course. For spring semester and summer session courses, this rule means the first month of the fall semester.

Monitoring these regulations is the responsibility of the departments, under the supervision of the Dean. Variations from the regulations—such as changing the time of an in-class final examination for an entire class—are allowed only on approval of the Administrative Committee.

Grade Reports

Grade reports are sent to students at established addresses as soon as possible after the conclusion of each semester. (Copies of these reports are sent to the parents of students who are dependents of their parents or have authorized such reports.) A report is also sent to each student at the beginning of the senior year, showing total hours, quality points earned, grade point average, and degree requirements still to be met. Students should examine these reports carefully and discuss them with their faculty advisers. Any errors should be

reported immediately to the Registrar of the College (see also Change of Grade).

Grading System

- A: excellent
- B: good
- C: satisfactory
- D: minimum pass work
- F: failure

Under certain circumstances the following grades may be awarded:

- W: withdrawal
- P: (see P/F Course Provision)
- M: absent from final examination
- I: incomplete in some requirement other than final examination
- E: condition, with permission to retake final examination

Plus and minus modifiers may be associated with letter grades *A* through *D* as shown in the table below. Grade point averages are calculated using indicated grade point values.



Defined Grades with Corresponding Grade Points Per Credit Hour

A	= 4.0	C	= 2.0
A-	= 3.7	C-	= 1.7
B+	= 3.3	D+	= 1.3
B	= 3.0	D	= 1.0
B-	= 2.7	D-	= 0.7
C+	= 2.3	F	= 0.0

Grade Point Average

A student's grade point average is obtained by dividing the quality points earned by the hours for which the student has registered, excluding courses taken for no credit, those from which the student has officially withdrawn (see Withdrawal Period above), and those completed with the grade *P*.

In no case is the grade point average affected by transfer credit. No course at another institution in which a grade below *C-* was received is credited toward the degrees awarded by the College.

M: Missing a Final Examination

The grade *M* is given to a student who misses a final examination and is not known to have defaulted in the course, unless the student could not have passed the course even with the final examination, in which case the grade *F* is given. The course grade of a student known to have defaulted on a final examination is computed on the basis of a score of zero for the final examination. It is the responsibility of the student who misses a final examination to present an excuse to the Dean immediately. If the excuse is considered adequate, the grade *M* is authorized. In the event that an excuse is not presented to the Dean before the first day of the makeup examination period in the next

semester, the grade in the course becomes an *F*. This action is taken regardless of whether the student is in residence the following semester.

A student who secures authorization for an absence at the proper time is obliged to take a makeup examination during the first full week of the next semester, provided the student is in residence. It is the student's responsibility to contact the Office of the Dean (311 Kirkland Hall) before the second day of classes to schedule the makeup. If the student is not in residence, the grade *M* must be removed by a makeup examination given within a maximum period of one year from the date of the missed examination and during one of the regular makeup examination periods. Otherwise, the grade *M* becomes an *F* by default. Any student who has sufficient reason for retaining the *M* grade for longer than the period allotted or for taking the makeup examination at a special time may petition the Administrative Committee for permission. The grade *M* is counted as an *F* in calculating the grade point average until it is replaced with a permanent grade.

I: *Incomplete*

Essays, book reviews, laboratory reports, etc. must be submitted no later than the last regular class meeting of the semester or at an earlier date if so specified by an instructor in a particular course. Students are required to make up quizzes or examinations missed during the semester with an authorized excuse by no later than the last class day of the semester (not the date of the final examination). The grade of any student not complying with this schedule is computed on the basis of the grade zero for the missing work, unless an extension is granted by the Dean upon petition by the student, with the endorsement of the instructor. These petitions must be presented on a day prior to the date on which the work is due.

Students for whom extensions have been authorized receive the temporary grade *I* (incomplete), which is removed at the end of the extension period. If the missing work is not completed at this time, it is computed as zero and a final grade is assigned. The grade for a student who misses a final examination and whose work is also incomplete in other respects is reported as *MI*. This grade may not be turned in without prior authorization by the Dean. The grade *I* is counted as an *F* in calculating the grade point average until it is replaced with a permanent grade.

E: *Condition*

An instructor may give the grade *E* (condition) in a course when in the instructor's judgment (a) the work represents a borderline case and additional evidence is necessary to determine whether the student should be given the grade *D-* or *F* or (b) the results of the final examination are such that they reduce the student's average in a course from passing to slightly below passing. But if the examination grade reduces the student's average to considerably below passing, the student will receive the grade *F*. The grade *E* must be removed during the regular makeup examination period of the student's next semester in residence or it becomes an *F* by default. A student who takes a

reexamination to remove an *E* will receive the final grade *D–* or *F* in the course, depending on whether the grade on the second examination is passing or failing. Only one reexamination is allowed to replace the grade *E*.

Makeup Examinations

For students who receive the authorized grade *M* or *E*, the Office of the Dean will arrange makeup examinations during the next semester, but it is the responsibility of the student to schedule the makeup at the Office of the Dean (311 Kirkland Hall) before the second day of classes. The makeup examination period is the first full week of each semester. The Administrative Committee may on occasion authorize a makeup examination at some time other than the makeup period for a particular student.

F: Failure

The grade *F* indicates failure. All *F*s are counted in the computation of grade point averages, except when a course is repeated and is subsequently passed. In this case the latest grade is used for computation of the grade point average (but the grade originally earned is not removed from the transcript). A course in which the grade *F* is received must be repeated as a regular course if credit is to be given. It may not be repeated as a course in independent or directed study, under the procedures for credit by examination, or on a P/F basis.

Change of Grade

A grade reported and recorded in the College Registrar's Office may be changed only upon written request of the instructor with the approval of the Administrative Committee. The committee will approve such a change only on certification that the original report was in error.

Repeated Courses

Most courses offered in the College of Arts and Science may be repeated. If a course was failed the last time it was taken, credit is awarded when the course is repeated with a passing grade. If a course was previously passed, no new credit is earned. If a course previously passed is repeated and failed, credit originally earned for it is lost. In any case all grades earned are shown on the transcript. Under conditions explained below, the most recent grade in a course replaces the previous grade in determining credit, in computing the grade point average, and in verifying the completion of degree requirements and progress toward the degree.

The policy of grade replacement applies when all of the conditions below are met.

1. A previously passed course is repeated within one year or (for courses not offered within a year) the first time it is offered. Passed courses may be repeated only once. Failed courses may be repeated at any time and any number of times.

2. Exactly the same course (same department and course number) is completed. In addition, a very small number of differently numbered courses as approved by the faculty may be substituted under this policy. These are designated in the departmental course listings.

3. The course is repeated on a regularly graded basis. This limitation applies even if the course was originally taken on a P/F basis.

4. The course is not one in independent study or directed study.

In most instances, enrollment in a course similar to one already completed but with a different course number will result in the award of no credit for the second course and will have no effect on the grade point average. The Registrar of the College should be consulted as to the status of similar but differently numbered courses.

Courses taken in the College may not be repeated elsewhere for grade replacement; nor may courses taken elsewhere be repeated in the College for grade replacement.

When registering for a course previously completed, a student should indicate that the course is being repeated. On OASIS the student should respond correctly when asked whether the course is being repeated. Failure to do so could result in an incorrect record, a subsequent adjustment of credit, and a delay in the student's graduation.

Students are cautioned that while repeating for grade replacement a course previously passed may improve their cumulative grade point average, it may also lead to a problem in meeting minimum hours requirements for class standing because no new credit is earned.

Credit by Examination

In certain circumstances, students may be awarded course credit by departmental examination. (This procedure is distinct from the award of credit through the College Board Advanced Placement Tests taken prior to the student's first enrollment.)

Students wanting to earn credit by departmental examination should consult the Registrar of the College concerning procedures. To be eligible, students must be carrying a minimum of 12 hours and be in good standing.

Students must obtain the approval of the chair of the department that is to give the examination and the instructor designated by the chair. Students may earn up to 30 hours of credit by any combination of credit through advanced placement examinations and credit by departmental examination. Students may earn up to 8 hours of credit by examination in any one department. Students may attempt to obtain credit by examination no more than twice in one semester, no more than once in one course in one semester, and no more than twice in one course. Students may not repeat a course for grade replacement under the credit by examination procedures.

Credit hours and grade are awarded on the basis of the grade earned on the examination, subject to the policy of the department awarding credit. Students have the option of refusing to accept the credit hours and grade after learning the results of the examination.

Students enrolled for at least 12 hours are not charged extra tuition for hours earned through credit by examination, so long as the amount of credit falls within the allowable limits of an 18-hour tuition load, including no-credit courses and courses dropped after the change period. Students in this category must pay a \$50 fee for the cost of constructing, administering, and grading the examination. Since this cost has already been incurred, students who refuse the credit hours and grade are charged the \$50 fee nevertheless. Full-time students with a tuition load exceeding 18 hours and students taking fewer than 12 hours pay tuition at the regular rate with no additional fee.

Declaration of Area of Concentration

Students may formally declare a major at any time during the third or fourth semester of residence. The student selects a department and applies to that department for assignment to an adviser. Students wanting to develop an interdisciplinary program apply to the Dean.

A major must be declared no later than the fourth semester. Each spring a program is arranged that provides for consultation of sophomores with department chairs, for the purpose of helping students select a major. Sophomore students who have not declared a major should participate in this program if they intend to attain junior standing before the next spring.

The selection of a major is of considerable importance, and students should feel free to discuss this matter personally with members of the faculty and with the Dean. Students officially declare their majors by registering with the chosen department(s) or with an interdisciplinary adviser approved by the Dean, and with the Registrar of the College. When the student's major has been registered, the student's file is transferred from the pre-major adviser to the new major adviser.

Comprehensive Examination

Any department or interdisciplinary program may require a comprehensive examination of its major students as a condition of graduation.

Senior Reexamination

Candidates for graduation who fail not more than one course in the final semester of the senior year are allowed one reexamination, provided the course failed prevents the student's graduation and provided the student could secure a passing grade in the course by passing the reexamination. The reexamination for removal of the grade *F* is given immediately after the close of the last semester of the student's senior year, but not until all grades for the senior year have been received by the Registrar of the College.

Students taking a senior reexamination receive either *D-* or *F* in the course.

Transfer Credit

It is the student's responsibility to provide all of the information needed by the College to assess the program for which transfer of credit is requested. Work presented for transfer must be from an accredited college and is subject to evaluation in light of the degree requirements of the College. Students seeking transfer credit for work at non-accredited institutions will be considered individually. Correspondence courses will not be considered for transfer credit.

Work transferred to Vanderbilt from another institution will not carry with it a grade point average. No course in which a grade below C- was received will be credited toward a degree offered by the College. The question of credit in the College for previous work done at another institution must be settled in advance of the student's first registration. Credit for previous work will not be added to the student's record after matriculation.

Transfer students must spend at least four full semesters, including the last two semesters, enrolled in the College of Arts and Science and earn at least 60 credit hours while so enrolled.

Residence Requirement

A minimum of four normal semesters (at least 60 semester hours), including the last two semesters (or 30 semester hours), must be spent in residence in the College of Arts and Science unless an exception is made by the Administrative Committee. Students transferring from other schools of the University must spend the last year (or 30 semester hours) in residence in the College of Arts and Science.

Summer Work at Another Institution

Students enrolled in the College of Arts and Science may receive transfer credit for a maximum of two courses taken during summers at another four-year, fully accredited institution. To qualify for such credit, the student must be in good standing and must obtain authorization from the Dean and the appropriate department in advance of taking the course. Such courses cannot fulfill College Program requirements, count as part of the last 30 hours in residence, duplicate a course taken previously, or be taken on a Pass/Fail or similar basis.

Semester out of Residence

Students wanting to receive transfer credit for a semester of work at another institution must receive approval in advance from the Committee on Individual Programs. To qualify for such credit, the student must be in good standing and must present to the committee a plan that makes clear the educational rationale for such work, the ways in which it supplements the Vanderbilt curriculum, and the equivalence of standards to those at Vanderbilt. Approval of the overall plan by this committee must be followed by approval of specific courses by the student's adviser, the appropriate department in the College,

and the College Registrar. College Program requirements may not be satisfied during a semester out of residence.

Senior-in-Absentia

A student wanting to earn a baccalaureate degree in the College of Arts and Science in absentia must have (a) completed the College Program requirements and all major requirements; (b) earned at least 105 credit hours and a grade point average of 2.000 with at least 60 credit hours earned in a minimum of four semesters of residence in the College of Arts and Science; (c) been accepted at a professional or graduate school where, during the first year, the remaining hours needed for graduation can be earned; and (d) obtained the approval of the major department and the Dean of the College. Students who have completed fewer than 105 credit hours may petition the Administrative Committee for special consideration.

The limitation on professional hours applies to all Bachelor of Arts candidates.

Students in the senior-in-absentia program pay a minimum semester tuition charge to the College of Arts and Science (see Financial Information).

A&S

Student Leave of Absence

A student desiring a leave of absence should obtain application forms and instructions from the office of the Dean of the College. All students are eligible, provided they have not been dropped by the University and are not dropped at the end of the semester during which application is made. But students may take a leave no more than twice during their career in the College.

Leaves are granted for one semester or for a year. Applications should be completed before the end of the fall semester for a leave of absence during the spring semester, and before 15 August for a leave of absence during the fall semester (or for the academic year). If the leave is approved, the student must keep the Dean informed of any change of address while on leave.

Should a student seek to transfer to Vanderbilt credit earned elsewhere while on leave of absence, it is mandatory that permission be obtained in advance from the Committee on Individual Programs. Applications for leaves of this type must be filed with the committee at least one month before the close of the preceding semester.

Registration materials are mailed to students on leave of absence. A student failing to register at the conclusion of the stated leave will be withdrawn from the University and must apply for readmission.

Withdrawal from the University

Students proposing to withdraw from the University during a regular term must report to the Office of the Dean of the College to initiate proper clearance procedures. If withdrawal from the University is officially authorized, the student will receive withdrawal grades on the same basis as a student withdrawing from a particular course or courses. (See Period for Withdrawal.)

Change of Address

Students are responsible for keeping the University informed of their correct mailing addresses, both school and home. They should notify the University, through the Office of the University Registrar, in writing, of any address changes as soon as possible. They are provided an opportunity to review address information at registration. The University will consider notices and other information delivered if mailed to the address on file in the registrar's office.

Academic Discipline

The College requires each student to maintain an academic record that will permit graduation according to a specified schedule. Students are considered to fall short of the expected rate of progress when

1. They pass fewer than 12 hours in a semester or have a semester grade point average lower than 1.500; or
2. In a summer they take 12 or more hours but pass fewer than 12 hours or earn a grade point average lower than 1.500; or
3. They fail to achieve sophomore, junior, or senior standing within the time allowed; or
4. They accumulate more than two probations after the freshman year, in which case they will normally be dropped from the University; or
5. As first-semester freshmen they pass fewer than two courses or earn a semester grade point average lower than 1.000, in which case they may be required to take a probationary leave of absence; or
6. As first-semester freshmen they earn fewer than 9 hours or a semester grade point average lower than 1.500, in which case they may be offered a choice (see Semester Requirements below).

Any student who falls somewhat short of the prescribed levels of academic achievement is normally placed on probation. Any student who fails by a wide margin to reach these levels or who has been placed on probation more than once is reviewed by the Administrative Committee. The committee considers each case within the framework of the guidelines outlined below and may take any of several actions, among which are the following:

1. The student may be placed on probation;
2. The student may be required to participate in the programs of the Learning Center;
3. The student may be advised to take a leave of absence or to withdraw from the University;
4. The student may be required to take a leave of absence;
5. The student may be dropped from the University.

Semester Requirements

Full-time students are expected to earn each semester at least 12 hours and a minimum grade point average of 1.500. Students who fall short of these levels are normally placed on probation. Students are removed from probation after earning at least 12 hours and a semester grade point average of 1.500 or better, assuming they have fulfilled the requirements for class standing stated below.

Freshmen who pass fewer than two regular courses in their first regular semester or who earn a semester grade point average lower than 1.000 have so seriously compromised their academic standing that they may be required to take a probationary leave of absence until the beginning of the following fall semester.

Freshmen who earn fewer than 9 hours or a grade point average lower than 1.500 in the fall may, at the discretion of the Administrative Committee, be given a choice between the following options: (a) they may choose a probationary leave for the spring and return the next fall with two semesters in which to qualify for sophomore standing; (b) they may elect instead to participate in a special counseling program sponsored by the Learning Center, with sophomore standing required by the end of the spring semester or, with adequate progress in the spring, by the end of the summer (participation in the special counseling program is a condition for remaining in school for the spring).

A student on probationary leave may not earn credit at another institution for transfer to Vanderbilt. In appropriate cases the Administrative Committee may prescribe conditions that must be satisfied before the student returns from a probationary leave. Students who do not choose to return at the end of a probationary leave but want to return later are required to apply for readmission.

After their first year, full-time students may not be placed on probation more than twice (continuance on probation for a second semester counts as another probation). If a student's performance is deficient a third time, the student is dropped from the University.

Students who have been authorized to carry fewer than 12 hours because of illness or outside employment may be placed on academic probation if their work is deemed unsatisfactory by the Administrative Committee; they are removed from probation when the committee deems their work satisfactory. If they are not removed from probation after a reasonable period of time, such students are dropped.

The record of a student dropped from the University under these regulations shows the notation "Dropped for scholastic deficiency."

Class Standing

A student qualifies for sophomore standing upon completion of 24 hours of work with a grade point average of at least 1.800, completion of the first-year writing requirement (see the section on Writing under the College Program, above), and successful completion of a freshman seminar (numbered 115 in various disciplines). Freshmen who fail to qualify for sophomore standing in

two semesters are placed on probation and must have the permission of the Administrative Committee to register for a third semester. The third semester must be the summer semester at Vanderbilt. Normally, students who do not qualify for sophomore standing during this third semester are dropped from the University.

A student qualifies for junior standing upon completion of 54 hours of work with a grade point average of 1.900 and completion of the whole of the writing requirement. Sophomores who fail to qualify for junior standing within two semesters after qualifying for sophomore standing are placed on probation and must have the permission of the Administrative Committee to register for another semester. This additional semester must be the summer semester at Vanderbilt. Normally, students who do not qualify for junior standing in this additional semester are dropped from the University.

A student qualifies for senior standing upon completion of 84 hours of work with a grade point average of 2.000. Juniors who fail to qualify for senior standing within two semesters after qualifying for junior standing are placed on probation and must have the permission of the Administrative Committee to register for another semester. This additional semester must be the summer semester at Vanderbilt. Normally, students who do not qualify for senior standing in this additional semester are dropped from the University.

Seniors who fail to maintain a minimum grade point average of 2.000 are placed on probation and must have the permission of the Administrative Committee to register for another semester.

The Administrative Committee determines how many semesters will be allowed for each part-time student to attain sophomore, junior, or senior standing.

The record of a student dropped from the University under these regulations shows the notation "Failed to qualify for class standing."

Returning to the College

Students on leave of absence return to the University at the end of the leave. If they do not return at that time and want to return later, they must apply for readmission. Students who are advised to withdraw from the University determine whether or not to return in consultation with the office of the Dean. Students who have been dropped may apply to the Office of Undergraduate Admissions for readmission; in most cases readmission is not granted unless there has been an intervening period of at least a year. The Office of Undergraduate Admissions forwards all documents to the Administrative Committee, which considers each case on an individual basis. Readmission is competitive, and there is no assurance that it will be granted. Students readmitted after having been advised to withdraw or after having been dropped are automatically on final probation. If they fail to regain good standing and to maintain it until graduation, they are dropped again with little prospect for readmission. Application deadlines for readmission are as follows: 15 July for the fall semester, 15 November for the spring semester, and 1 April for the summer session.

Appeals

Any student subject to action by the Administrative Committee may appeal that action to the committee in writing. Further appeals from decisions of the committee follow standard University policies as described in the *Student Handbook*.



Courses of Study

I

Explanation of Course Numbers and Symbols

100-level courses are primarily for freshmen and sophomores.

200-level courses are normally taken by juniors and seniors but are open also to qualified sophomores and freshmen.

Hours are semester hours—e.g., a three-hour course carries credit of three semester hours.

Bracketed figures indicate semester hours credit—e.g., [3] for one semester and [3–3] for a two-semester course.

Length of a course (one semester or two) is indicated by whether it has a single or a double number:

210–211. Numbers are different. Either semester may be taken without the other.

220a–220b. Numbers are the same, indicating a year course. If credit hours are stated in hyphenated figures [3–3], students may take the first semester alone; but to take the second semester alone students must have the consent of the course instructor. A course is never credited as less than a full year unit if credit hours are stated in a single figure [6].

The semester in which a course is offered is indicated by the word FALL or SPRING in the course description. All two-semester courses begin in FALL and end in SPRING unless the course description specifies otherwise.

★ **Stars** mark certain introductory Arts and Science courses that are prerequisite for other courses in the department.

W symbols used in course numbers designate courses that will meet the College Program writing requirement.

The University reserves the right to change the arrangement or content of courses, to change the texts and other materials used, or to cancel any course on the basis of insufficient enrollment or for any other reason.

Some courses are tentative. Current information is available during registration. A definitive *Schedule of Courses* is published for the spring semester.

It is the responsibility of each student to avoid duplication, in whole or in part, of the content of any courses offered toward the degree. Such duplication may result in withdrawal of credit.

Dean Ettore Infante congratulates Founder's Medalist Brian James Miller



African American Studies

DIRECTOR Lucius Turner Outlaw, Jr.

I THE African American Studies program offers courses that treat the experiences of African-descended people both on the African continent and throughout the diaspora. Since a number of the courses required by the program are offered every other year, students must consult the program director soon after they decide to participate in the program to design a feasible course of study. Students may take courses on an elective basis or as part of an interdisciplinary major or minor. Courses taken at Fisk University may be counted as electives in the program of study.

Program of Concentration in African American Studies

The interdisciplinary major consists of 30 hours of core courses and 6 hours of electives. Requirements for the completion of the major include:

1. African American Studies 101, Introduction to African American Studies.
2. (*African American History*) History 279–280.
3. (*African History*) History 253–254.
4. (*African American Humanities*) Three hours in the humanities, to be selected from: African American Studies 114 (Introduction to African American Philosophies of Religion), African American Studies 145 (Interfaith Dialogue and African American Culture), African American Studies 263 (African American Literature), African American Studies 294-01 (Contemporary Black Experience); Dance 114 (Black Dance in America); English 115W-41 (African American Autobiography), English 115W-49 (Afro-Caribbean Women's Literature), English 115W-50 (African American Literature), English 115W-55 (Toni Morrison), English 115W-56 (Harlem Renaissance), English 271 (Caribbean Literature), English 272d (Movements in Literature: The Contemporary Black Experience), English 273c (Problems in Literature: Reading Race in Nineteenth-Century America), English 273d (Problems in Literature: Marginality in African American and South African Literature), English 274-01 (Major Figures in Literature: Toni Morrison), English 350-01 (Special Problems in English and American Literature: Restoring Race in Nineteenth Century American Literature), English 355-01 (Special Topics in English and American Literature: Afro-American Literature—Diaspora and Dissension), English 355-02 (African American Novel); Fine Arts 293 (Senior Seminar: Twentieth Century African American Art), Fine Arts 294-01 (Special Topic: African American Art—Harlem Renaissance), Fine Arts 325 (Special Topics: African American Art); Music (MUSL) 148 (Survey of Jazz); Philosophy 294a-01 (Selected Topic: Philosophy of Race); Religious Studies 107 (African Amer-

ican Religious Tradition), Religious Studies 115–05 (Gandhi, Luthuli, and King), Religious Studies 204 (The Evangelical Movement in America), Religious Studies 205 (Black Church in America), Religious Studies 219 (Martin Luther King Jr. and the Social Roles of Religion), Religious Studies 250 (Black Islam in America); Spanish 294 (Afro-Hispanic Literature).

5. (*African Humanities*) Three hours in the humanities, to be selected from: English 115W-63 (African Literature and Theory), French 239 (The African Novel); Humanities 115-05 (African Literature); Music (MUSL) 160 (Musical Cultures of the Non-Western World), Music (MUSL) 171 (African Music); African American Studies 276 (Anglophone African Literature); Religious Studies 294 (Special Topic: Religions in Africa), Religious Studies 294 (Special Topic: Traditional African Religions, Christianity and Islam).

6. (*African American Social Sciences*) Three hours in social sciences, to be selected from: History 172 (Comparative Slavery in the Americas); Anthropology 219 (Origins of African American Culture), Anthropology 224 (Political Anthropology: Crosscultural Studies in Conflict and Power), Anthropology 237 (Ethnicity, Race, and Culture); African American Studies 255 (Racial and Ethnic Minorities in the U.S.), African American Studies 258 (Rise of the Iberian Atlantic Empires, 1492–1700), African American Studies 264 (Brazilian Civilization), African American Studies 279 (History of Black Americans), African American Studies 280 (African American History to Reconstruction), African American Studies 294-02 (African American Women since Reconstruction); History 295-01 (Black Protest), History 295-02 (Civil Rights Revolution), History 295-07 (African Resistance and Adaptation in the Americas), History 381 (African American History in the Twentieth Century); Political Science 115W-02 (Race and Gender Politics); Psychology 266 (Interpersonal and Intergroup Relations); Sociology 115-03 (Otherness in the U.S.: Images of Race, Gender, and Sexual Preference), Sociology 115-09 (Poverty and Inequality in the U.S.), Sociology 115-12 (Race and Race Relations in the Contemporary South), Sociology 258 (The South in American Culture), Sociology 262 (Interpersonal and Intergroup Relations), Sociology 294 (Special Topic: Race, Gender, and Sport).

7. (*African Social Sciences*) Three hours in social sciences, to be selected from: African American Studies 235 (Human Geography of Sub-Saharan Africa), African American Studies 253 (African History: Sub-Saharan Africa), African American Studies 254 (African History: Africa since 1800), African American Studies 294 (Special Topic: Genocides and Terrorisms in Africa); Anthropology 231 (Archaeology of Africa); History 115W-46 (Crises in the Horn of Africa), History 264, History 295-02 (Resistance and Adaptation to Slavery in Americas); Political Science 219 (African Politics); Sociology 275 (Sociology of Contemporary African Societies).

8. Six hours of elective credit selected from the approved lists of elective course offerings at Vanderbilt and Fisk universities. Consult the African American Studies program office for the approved lists of courses.

9. African American Studies 299, Senior Project in African American Studies. Students are required to complete an independent study in an area of interest to them during their senior year. This project will be selected in consultation with the program director and supervised by an affiliate faculty of the program. The focus will be on the use of interdisciplinary methods and materials that the students have accrued in their earlier courses. The project will involve independent readings and research, and result in a research paper on a salient aspect of the black experience, either across time or space (a spatial analysis could involve a comparative examination of the lives of African-origin people across the globe).

Minor in African American Studies

Students who select a minor in African American Studies must choose an emphasis either in African or African American studies. Each minor comprises 18 credit hours, and requires completion of the two-course (six hours) history sequence in the student's chosen geographic area (African or African American); and three hours each of humanities and social sciences course work in the respective geographic area. Six hours of electives must be chosen from the lists of approved courses offered by Vanderbilt or Fisk Universities, which may be obtained in the program office in 201 Garland Hall. Elective courses are not restricted to courses in the student's selected geographic area. Courses must be selected in consultation with the program director.

African American Studies 101. Introduction to African American Studies. Survey of the foundations of African American culture beginning with ancient African history and continuing through contemporary issues in the African American experience. The characteristics, developments, and dynamics of African American culture in the United States. SPRING. [3] Staff.

African American Studies 114. Introduction to African American Philosophies of Religion. (Also listed as Religious Studies 114) Contemporary African American scholars. The idea of God, the problem of evil and suffering. The problem of divine revelation and religious knowledge, and the contributions of religion to problems of human identity, and difference. FALL. [3] Anderson. (Divinity School)

African American Studies 115W. Freshman Seminar [3].

African American Studies 145. Interfaith Dialogue and African American Culture. (Also listed as Religious Studies 145) An examination of the lives, thought, and activities of Malcolm X and Martin Luther King, Jr., with special attention to their significance as sources of dialogue for Christians and Muslims. Of particular importance are the constructive insights that these leaders provide for those who wish to understand the two great faith communities and culture in the African American context. SPRING. [3] Baldwin.

African American Studies 235. Human Geography of Sub-Saharan Africa. (Also listed as Social Science 235) Spatial manifestations of a resilient cultural heritage and focus on sustainability of informal communities. Topics include indigenous political institutions, traditional medicine, population distribution and movements, geography and gender, and environmental impacts. SPRING. [3] Garbharran.

African American Studies 253. Sub-Saharan Africa: 1400–1800. (Also listed as History 253) Pre-colonial history of West and Central Africa: the rise of early empires, cultural history of major groups, the spread of Islam, the Atlantic exchange, development of the Atlantic plantation complex, and the slave trade. FALL. [3] Landers.

African American Studies 254. Africa since 1800: The Revolutionary Years. (Also listed as History 254) Political, economic, and social patterns in SubSaharan Africa from 1800 to the present. The transition from traditional states and societies, through the colonial interlude and the quest for independence, to the modern national setting with its problems of development. Emphasis on the peoples of Nigeria and South Africa. [3] Longwell.

African American Studies 255. Racial and Ethnic Minorities in the United States. (Also listed as Sociology 255) Status of blacks, Asians, Hispanics, and other minorities. Migration, identity and association, and strategies to improve group status and reduce intergroup tensions. Comparisons to other countries. FALL. [3] Santoro.

African American Studies 258. Rise of the Iberian Atlantic Empires 1492–1700. (Also listed as History 258) Pre-Columbian societies; the formation of the early Spanish state and imperial expansion in the Americas; the formation of multiethnic transatlantic societies. FALL. [3] Landers.

African American Studies 259. Decline of the Iberian Atlantic Empires, 1700–1820. (Also listed as History 259) Reorganization of the Spanish and Portuguese empires, maturation of transatlantic societies; revolutions for independence. [3] Landers. (Not currently offered)

African American Studies 263. African American Literature. (Also listed as American and Southern Studies 263 and English 263) Examination of the literature produced by African Americans. May include literary movements, vernacular traditions, social discourses, material culture, and critical theories. FALL. [3] Smith McKoy.

African American Studies 264. Brazilian Civilization. (Also listed as History 264) From pre-Columbian times to the present. Class and fusion of Portuguese, Amerindian, and African cultures; sugar and slavery; independence and empire; the coffee economy; race relations; the search for national identity; industrialization; dictatorship and democracy in the twentieth century. FALL. [3] Eakin.

African American Studies 276. Anglophone African Literature. (Also listed as English 276) From the Sundiata Epic to the present, with emphasis on the novel. Issues of identity, post coloniality, nationalism, race and ethnicity in both SubSaharan and Mahgrib literatures. Such authors as Achebe, Ngugi, Gordimer, Awoonor, and El Saadaw. SPRING. [3] Smith McKoy.

African American Studies 279. African American History to Reconstruction. (Also listed as History 279) The political, socioeconomic, and intellectual history of African American people from their African backgrounds to the end of Reconstruction. Special emphasis upon the institutional history of the African American community. FALL. [3] Franklin.

African American Studies 280. African American History since Reconstruction. (Also listed as History 280) The political, socioeconomic, and intellectual history of African American people from the end of Reconstruction to the present. Special emphasis upon African American cultural and institutional history and the twentieth-century protest movements. SPRING. [3] Franklin.

African American Studies 280a–280b. Internship. Under faculty supervision, students from any discipline can gain experience in a broad range of public and private institutions on issues relative to the black experience. A minimum of 3 hours of background reading

and research will be completed in African American Studies 280a concurrently with and regardless of the numbers of hours taken in internship training in 280b. Normally a 2.90 grade point average, 6 hours of prior work in African American Studies, and prior approval by the Director of African American Studies of the student's plan are required. A research paper and report must be submitted at the end of the semester during which the internship training is completed. **280a. Internship Readings and Research.** Readings conducted under the supervision of a member of Vanderbilt's African American Studies Program and a substantial research paper are required. FALL, SPRING, SUMMER. [Variable credit: 1–6] **African American Studies 280b. Internship Training.** Graded on a Pass/Fail basis only and must be taken concurrently with 280a. These hours may not be included in the minimum number of hours required for the African American Studies major. FALL, SPRING, SUMMER [Variable credit: 1–9]

African American Studies 289. Independent Study. FALL, SPRING. [Variable credit: 1–3 each semester]

African American Studies 294a–294b. Special Topics. [3]

African American Studies 299. Senior Project in African American Studies. Supervised readings and independent research to produce an interdisciplinary research paper, topic to be selected in conjunction with the director of African American Studies. Open only to seniors. [3]

American and Southern Studies

1 THE American and Southern Studies program offers an interdisciplinary major for students interested in deepening and broadening their understanding of the American experience in all its aspects and dimensions. Students majoring in this field often define their intellectual interests in such areas of concentration as American politics and culture, American political and social thought, art and literature in America, race and ethnicity in America, modern America, and the cultural experience of the American South. Students are encouraged to integrate traditional subjects and disciplines in a manner that reflects their own interests, ambitions, and needs. The major is designed for those students with interests in interdisciplinary studies of the humanities and social sciences, prelaw training, or careers in communications, journalism, public service, and education. Students are also encouraged to place their studies of American culture in the context of historic changes occurring in cultures outside the United States, ranging from Eastern Europe to Central and South America, Africa, and Asia.

The program is directed by Larry Griffin, Professor of Sociology and chair of the College Committee on American and Southern Studies.

Program of Concentration in American and Southern Studies

The interdisciplinary major consists of 36 hours of course work, to be distributed among various disciplines as indicated below. Emphasis is on political, cultural, economic, and related trends or events that contribute to the making of American culture and character in all its diversity. After completing the core requirements, students must concentrate on a theme, such as those named above, chosen in consultation with the director of the program. Students should expect to study the problems, developments, and crises of social history, technology, visual studies, gender, race, ethnicity, media, and political and literary culture. Each student will work with an adviser to design a program that meets his or her intellectual needs and interests.

Students should note that no more than 6 hours at the 100 level can count toward the interdisciplinary major and that often prerequisites exist for the courses that may be used in the major. Independent study, research courses, and selected topics courses should have topics appropriate to the student's course of study. Students seeking a second major may count a maximum of 6 hours of course work to meet requirements in both majors.

Requirements for the interdisciplinary major in American Studies include completion of the following:

1. American Studies 100.
2. American Studies 295 or American Studies 250.

3. Core requirements (15 hours) to provide a background and foundation for the interdisciplinary study of American culture and character, to be selected from the fields and courses listed below.

AMERICAN STUDIES (3 hours): 210, Perspectives on the American Experience: Art and Literature; 240, Topics in American Studies; 247, American Political Culture; 258, The South in American Culture.

ENGLISH (3 hours): 211, Representative American Writers; 212, Southern Literature; 272, Movements in Literature (when an American topic is listed); 273, Problems in Literature (when an American topic is listed).

HISTORY (3 hours): 268, The English Atlantic World, 1500–1688; 269, Cultural History of the First British Empire, 1707–83; 270, The Emergence of American Democracy; 272, The U.S. in the Era of the Civil War; 273, The Emergence of Modern America; 274, The U.S., 1916–1945; 275, Recent America: The United States since 1945.

SOCIAL SCIENCE (3 hours): Political Science 204, American Political Thought; Political Science 245, The American Presidency; Sociology 249, American Social Movements; Sociology 250, Gender in American Society (also listed as Women's Studies 250); Sociology 255, Racial and Ethnic Minorities in the United States.

An additional 3 hours of either American Studies or Social Science selected from the above core courses.

4. Concentrated program (15 hours) on a theme or topic to be developed and studied through an approved selection of courses from at least three departments, to be taken primarily from the following suggested courses.

AMERICAN STUDIES: 104, Men and Women in American Society; 204, Self, Society, and Social Change; 205, Development of the American Theatre; 210, Perspectives on the American Experience; 212, Southern Literature; 220–221, Rhetoric of the American Experience; 222, Classical Tradition in America; 223, Women and the Law; 240, Topics in American Studies; 241, Rhetoric of the Mass Media; 247, American Political Culture; 258, The South in American Culture; 263, African American Literature; 267, Desire in America; 268a–268b, America on Film; 270, The Frontier in Early America; 277, Asian American Literature; 278, History of Appalachia; 281, The United States and the Vietnam War; 289a–289b, Independent Readings and Research.

ANTHROPOLOGY: 214, North American Indians; 219, Origins of African American Culture; 229, North American Archaeology; 245, Art of Pre-Columbian America; 255, Native American Art.

CLASSICAL STUDIES: 222, Classical Tradition in America.

COMMUNICATION STUDIES: 220–221, Rhetoric of the American Experience; 224, Rhetoric of Social Movements, 241, Rhetoric of the Mass Media.

ECONOMICS: 212, Labor Economics; 226, Economic History of the United States; 246, Unions, Management, and Public Policy; 266, Economics of Poverty and Discrimination; 267, Problems in U.S. Economic History.

ENGLISH: 211, Representative American Writers; 212, Southern Literature; 232, Modern American Novel; 234, Contemporary American Fiction; 259, Nineteenth-Century American Poetry; 260, Nineteenth-Century American Writers; 263, African American Literature; 265, Film and Modernism; 266, The Nineteenth-Century American Novel; 267, Desire in America; 268a–268b, America on Film; 269, Special Topics on Film; 271, Caribbean Literature; 272, Movements in Literature (when an American topic is listed); 273, Problems in Literature (when an American topic is listed); 277, Asian American Literature; 286, Twentieth-Century Drama.

FINE ARTS: 240, American Art and Architecture; 241, Twentieth-Century American Art; 245, Art of Pre-Columbian America; 255, Native American Art.

HISTORY: 205, Historical Perspectives on Women, Health, and Sexuality; 267, The Frontier in Early America; 268, The English Atlantic World, 1500–1688; 269, Cultural History of the First British Empire, 1707–1783; 270, The Emergence of American Democracy; 271, The Era of Reform; 272, The U.S. in the Era of the Civil War; 273, The Emergence of Modern America; 274, The U.S., 1969–1945; 275, Recent America: The United States since 1945; 276, The Old South; 277, The New South; 278, History of Appalachia; 279–280, African American History; 281, The United States and the Vietnam War; 282, The United States and the World; 283, The United States as a World Power; 284–285, American Social History; 286–287, Women's Experience in America: Colonial Times to the Present; 288–289, History of American Thought; 292, Historical Geography of the United States.

MUSIC: 147, American Music; 149, American Popular Music; 294, Blackface Minstrelsy.

PHILOSOPHY: 222, American Philosophy; 234, Philosophy of Education.

POLITICAL SCIENCE: 204, American Political Thought; 222, American Foreign Policy; 223, The Making of U.S. Foreign Policy; 240, Political Parties; 241, American Public Opinion and Voting Behavior; 242, Political Communication; 243, Political Campaigns and the Elec-

toral Process; 244, The Legislative Process; 245, The American Presidency; 247, American Political Culture; 261, Constitutional Interpretation; 262, The Judicial Process; 287–288, Selected Topics (when an American topic is listed).

RELIGIOUS STUDIES: 107, Introduction to African American Religious Traditions; 145, Malcolm X and Martin Luther King Jr.; 204, The Evangelical Movement in America; 205, The Black Church in America; 217, The History of Religion in the United States; 219, Martin Luther King Jr. and the Social Roles of Religion; 252, Islam in America; 254, Native American Religious Traditions.

SOCIOLOGY: 204, Self, Society, and Social Change; 224, Women and the Law; 230, The Family; 231, Criminology; 235, Contemporary American Society; 236, Class, Status, and Power; 237, Society and Medicine; 238, Social Problems of American Medicine; 240, Law and Society; 241, Art in Society; 246, Sociology of Religion; 248, Popular Culture Dynamics; 249, American Social Movements; 250, Gender in American Society; 251, Women and Public Policy in America; 253, Gender, Work, and Culture; 254, Schools and Society; 255, Racial and Ethnic Minorities in the United States; 256, Race, Gender, and Sports; 258, The South in American Culture; 261, Work and Family in American Life; 294, Seminar in Selected Topics (when an American topic is listed).

THEATRE: 204, Development of the American Theatre.

WOMEN'S STUDIES: 205, Historical Perspectives on Women, Health, and Sexuality; 224, Women and the Law; 250, Gender in American Society; 251, Women and Public Policy in America; 253, Gender, Work, and Culture; 256, Race, Gender, and Sports; 260, Nineteenth-Century American Women Writers; 261, Work and Family in American Life; 286–287, Women's Experience in America: Colonial Times to the Present.

Honors Program in American and Southern Studies

The honors program in American and Southern Studies is designed to afford superior students the opportunity to pursue more intensive work in their area of thematic concentration. The program requires (a) a 3.0 cumulative grade point average in all general University courses, and a 3.3 grade point average in American and Southern Studies courses, (b) 6 hours of independent research, 298–299 (Honors Research and Thesis) normally taken during the senior year, (c) an honors thesis to be completed in the spring of the senior year, and (d) successful completion of an honors oral examination on the topic of the thesis.

American Studies 100. Introduction to American Studies. An interdisciplinary approach to American culture, character, and life. FALL, SPRING. [3] Boyd (American and Southern Studies), Kreyling (English).

American Studies 104. Men and Women in American Society. (Also listed as Sociology 104 and Women's Studies 104) This course focuses on ideas about masculinity and femininity and how these ideas carry with them inequalities in the distribution of power and resources available to men and women. We examine how gender permeates seemingly neutral aspects of everyday life—how we date, sexuality, family life, work relationships, political life, media images. FALL, SPRING. [3] Boyd (American and Southern Studies).

American Studies 115, 115W. Freshman Seminar [3]

American Studies 204. Self, Society, and Social Change. (Also listed as Sociology 204) Problems and prospects for individual participation in social change; volunteering, community service, and philanthropy; role of individuals and voluntary associations in social change. FALL. [3] Cornfield (Sociology).

American Studies 205. Development of the American Theatre. (Also listed as Theatre 204) A study of theatrical activity in the United States from the Colonial period to the present. The course will include the reading of selected plays. Prerequisite: sophomore standing and Theatre 100 or 115W. [3] J. Hallquist (Theatre). (Not currently offered)

American Studies 210. Perspectives on the American Experience: Art and Literature. An interdisciplinary study of American cultural expression from the early national period to 1900, focusing on the interplay between art and literature. [3] (Not currently offered)

American Studies 212. Southern Literature. (Also listed as English 212) The works of southern writers from Captain Smith to the present. Topics such as the Plantation Myth, slavery and civil war, Agrarianism, and "post-southernism." Authors may include Poe, Twain, Cable, Faulkner, Welty, Percy, Wright. FALL. [3] Kreyling (English).

American Studies 220. Rhetoric of the American Experience: 1640–1865. (Also listed as Communication Studies 220) A critical and historical examination of the methods and effects of public debate and other attempts to influence the attitudes, affective response, and behavior of the American people. Attention to the rhetorical features of selected issues and speakers from colonial times through the Civil War. FALL. [3] Morris (Communication Studies).

American Studies 221. Rhetoric of the American Experience: 1865 to the present. (Also listed as Communication Studies 221) A critical and historical examination of the methods and effects of public debate and other attempts to influence the attitudes, affective response, and behavior of the American people. Attention to the rhetorical features of selected issues and speakers from 1865 to the present. SPRING. [3] Morris (Communication Studies).

American Studies 222. Classical Tradition in America. (Also listed as Classical Studies 222) Influences of classical Greece and Rome on the literature, politics, architecture, and values of the United States from the colonial period to the present. SPRING. [3] Wiltshire (Classical Studies).

American Studies 223. Women and Law. (Also listed as Sociology 224 and Women's Studies 224) History of laws subordinating women and efforts by feminists to achieve substantive and procedural equity. American historical examples augmented by comparative research. Examines employment law, laws making rape and domestic violence illegal, and tax law. FALL. [3] Steinberg (Women's Studies and Sociology).

American Studies 225. American Philosophy. (Also listed as Philosophy 222) A study of works of selected American philosophers from the colonial period to the present. SPRING. [3] Outlaw (Philosophy and African American Studies).

American Studies 240. Topics in American Studies. Topics of special interest on American culture or society, as announced in the *Schedule of Courses*. May be taken three times for credit when topics vary. FALL, SPRING. [3]

American Studies 241. Rhetoric of Mass Media. (Also listed as Communication Studies 241) A study of the nature, effects, and reasons for the effects, ethics, regulation, and criticism of contemporary mass media communication. Political causes, news reporting, commercial advertising, and similar sources of rhetorics are included. FALL. [3] Sloop (Communication Studies).

American Studies 247. American Political Culture. (Also listed as Political Science 247) Content, historical development, and political consequences of the American public's deeply rooted values concerning how the political system ought to work and the ends it ought to serve. Attention to regional variation. SPRING. [3] Pride (Political Science).

American Studies 248. Intentional Communities. (Also listed as Political Science 248) The utopian impulse in fact and fiction; formation of polities such as communes, cults, and ecovillages; alternative subcultures within the United States with special emphasis on the 1960s and 1990s. MAY. [3] Pride (Political Science).

American Studies 250. Senior Tutorial. Supervised readings, joint discussions, and independent research on a topic related to the American experience, to be selected in consultation with the director of American Studies. Open only to juniors and seniors. FALL, SPRING. [3] Staff.

American Studies 258. The South in American Culture. (Also listed as Sociology 258) The changing relationship between the South and the rest of the country and its effects on understandings and definitions of the South; changes in southern social structures and patterns, race relations, and economic and political institutions. SPRING. [3] Griffin (Sociology).

American Studies 260. Nineteenth-Century American Women Writers. (Also listed as English 260 and Women's Studies 260) Themes and forms of American women's prose and poetry, with the emphasis on alternative visions of the frontier, progress, class, race, and self-definition. Authors include Child, Kirkland, Fern, Jacobs, Harper, Dickinson, and Chopin. [3] (Not currently offered)

American Studies 263. African American Literature. (Also listed as African American Studies 263 and English 263) Examination of the literature produced by African Americans. May include literary movements, vernacular traditions, social discourses, material culture, and critical theories. [3] (Not currently offered)

American Studies 267. Desire in America: Literature, Cinema, and History. (Also listed as English 267 and Film Studies 267) The influence of desire and repression in shaping American culture and character from the mid-nineteenth century to the present. [3] (Not currently offered)

American Studies 268a. America on Film: Art and Ideology. (Also listed as English 268a and Film Studies 268a) American culture and character through film, film theory, and literature. FALL. [3] Girgus (English).

American Studies 268b. America on Film: Performance and Culture. (Also listed as English 268b and Film Studies 268b) Film performance in the construction of identity and gender, social meaning and narrative, public image and influence in America. SPRING. [3] Girgus (English).

American Studies 270. The Frontier in Early America: War and Cultural Interaction. (Also listed as History 267) Frontiers in North America, 1500–1763. War, trade, and cultural exchange among the native, British, French, and Spanish residents of North America. The meaning of cultural frontiers and of cycles of peace and war in borderlands. FALL. [3] Staff.

American Studies 277. Asian American Literature. (Also listed as English 277) Examines the diversity of Asian American literary production with specific attention to post-1965. Focus on topics such as gender and sexuality, memory and desire, and diaspora and panethnicity in the context of aesthetics and politics of Asian American experience. SPRING. [3] Chen (English)

American Studies 278. History of Appalachia. (Also listed as History 278) The region from first European intrusions to the present. Frontier era white-indigenous contact, antebellum society and economy, relations with the slave South, the Civil War and postwar politics, increasing social strainings, industrialization and labor conflict, poverty, and outmigration. Examination of mountain culture, tourism, and the construction of the "hillbilly" image. [3] (Not currently offered)

American Studies 280a–280b. Internship, Research, Reading, and Training. Under faculty supervision, students intern in public or private organizations, conduct background research and reading, and submit a research paper at the end of the semester during which the internship training is complete. Background reading and research will be completed in 280a concurrently with the completion of internship training, 280b; a minimum of 3 hours of 280a must be completed, independent of hours taken in 280b. 280a: Internship, research, and reading. FALL, SPRING, SUMMER. [Variable credit: 1-6]. 280b: offered on a pass/fail basis only and must be taken concurrently with 280a. FALL, SPRING, SUMMER. [Variable credit: 1–9] Griffin.

American Studies 281. The United States and the Vietnam War. (Also listed as History 281) Origins of American involvement, the reasons for escalation, and the Vietnamese response to intervention. The impact on America's domestic politics, the growth of the anti-war movement, and the economic, social, and cultural effects of the conflict. [3] (Not currently offered)

American Studies 289a–289b. Independent Readings and Research. Independent readings and/or research on approved topics relating to American society and culture. [Variable credit: 1–3 each semester, not to exceed a total of 6 in 289a–289b combined] Staff.

American Studies 295. Undergraduate Seminar in American Studies. Advanced reading, research, and writing in a particular area of American Studies. May be taken no more than two times, and not twice from the same professor. Limited to juniors and seniors with preference given to American Studies majors. FALL, SPRING. [3]

American Studies 298. Senior Honors Research. Acquisition, reading, and analysis of primary source research material. Open only to senior honors students. FALL. [3] Griffin.

American Studies 299. Senior Honors Thesis. Writing an honors thesis under the supervision of the thesis adviser. SPRING. [3] Griffin.

American Studies 310. Topics in American Culture and Character. Topics as announced in the *Schedule of Courses*. May be repeated twice for credit when topics vary. [3] (Not currently offered)

Anthropology

CHAIR Thomas A. Gregor

DIRECTOR OF UNDERGRADUATE STUDIES Beth A. Conklin

DIRECTOR OF GRADUATE STUDIES Arthur A. Demarest

PROFESSOR EMERITUS Ronald Spores

PROFESSORS Arthur A. Demarest, Volney Gay, Thomas A. Gregor, Alice Carmichael Harris

ASSOCIATE PROFESSORS Beth A. Conklin, William R. Fowler Jr., John D. Monaghan

ASSISTANT PROFESSORS Deborah Blom, Francisco Estrada Belli, Edward F. Fischer,
John Wayne Janusek

I ANTHROPOLOGY is the study of human biology, evolution, society, and culture. The faculty in anthropology at Vanderbilt is nationally prominent in the study of pre-Columbian cultures and the ancient civilizations of the New World. Classroom teaching, symposia, social activities, and summer opportunities are enhanced by faculty and teaching fellows' involvement in ongoing archaeological and ethnographic research in Mexico, Central America, and South America.

Students majoring in anthropology take courses in several subfields of anthropology, each of which looks at humanity from a different perspective. These subfields include archaeology, the study of past cultures through their material remains; cultural anthropology, which examines the structure of the social group and the values and ideas that shape human conduct; and physical anthropology, which examines topics such as human evolution and human biology. Anthropology students develop a broad understanding of cultural development and diversity and are encouraged to reach a personal synthesis of scientific findings on the nature of human ways of life. This preparation is useful in all professional careers.

Program of Concentration in Anthropology

The major in anthropology requires completion of at least 30 hours of course work, as follows:

1. Three 100-level surveys (Anthropology 101, 103, and 104) covering three major subfields of anthropology: cultural anthropology, physical anthropology, and archaeology.

2. A minimum of three hours from each of the groups below:

Group I—Comparative Anthropology and Anthropological Theory: 130, 206, 218, 223, 224, 226, 228, 233, 234, 237, 240, 250, 263, 265, 266, 284

Group II—Archaeology and Physical Anthropology: 106, 173, 207, 211, 212, 213, 216, 217, 218, 225, 227, 229, 230, 231, 239, 245, 246, 248, 251, 254, 270, 271, 272, 273

Group III—Ethnography, Ethnohistory, and Linguistics: 102, 201, 203, 210, 214, 220, 231, 241, 247, 249, 255, 256, 257

3. A seminar on anthropological theory (206 or 284). The seminar may not also be used to count toward Group I credit above.
4. At least 18 hours of credit must be at the 200 level.
5. With the approval of the student's major adviser, a maximum of 3 hours of credit from the following list of courses may be counted toward the major requirement. The course chosen must be relevant to the student's program.
 - Biology 205, 239 (also Biological Sciences 205, 239); Geology 150; Linguistics 200, 202; Mathematics 127a, 127b, 180; Psychology 242; Religious Studies 130, 131, 235, 237, 254, 256; Sociology 201, 202, 220, 230, 261.

Honors Program

The honors program in anthropology is designed to afford superior students the opportunity to pursue more intensive work within their major field. Students who want to do honors work in anthropology should contact the director of the honors program in the fall of their junior year.

101. Introduction to Anthropology. An introduction to general anthropology, the study of diverse cultures in both the contemporary world and the past. The ways in which cultures have adapted and developed, bringing to bear the understanding derived from the four subdisciplines of anthropology: cultural, physical, linguistics, and archaeology. Intended for students with a general interest in the field of anthropology. Credit not given for both 101 and 105. FALL, SPRING. [3] Fischer, Monaghan.

102. Anthropology of Contemporary Issues. Current problems in complex, industrialized, and Western cultures. Field methods and ethical dilemmas of conducting research in contemporary settings. Anthropological perspectives on mass media, international business, urban gangs, poverty, immigration, development projects, health care, modern myths and rituals. [3] (Not currently offered)

103. Origins and Evolution of Human Culture. Introduction to biological and cultural evolution from primate origins to the end of the Stone Age. Origins and diversification of the world's first major cultural traditions. Archaeological evidence and controversies in interpretation. Not open to students who have taken 271. SPRING. [3] Blom.

104. The Rise and Fall of Civilization. A comparative survey of the archaeological evidence on the origins, development, and collapse of the great early civilizations of the world. The transformation of human societies from the first settled villages to urban states in Mesopotamia, Egypt, India, China, Mexico, and Peru. Discussion and debate of the archaeological discoveries, alternative interpretations, and general theories of cultural evolution. FALL. [3] Janusek.

106. Evolution and Creationism. History of the controversy between evolution and creationism. Transformation of debate in light of new discoveries. Interplay between science and culture. Discussion of creationist challenges to Darwinian theory. Realms of science and religion in human inquiry. [3] (Not currently offered)

115. Freshman Seminar. FALL, SPRING. [3] Gregor, Fowler (FALL), Janusek (SPRING).

130. Images of Culture. (Also listed as Fine Arts 130) The anthropology of art. Comparative study of aesthetics and the nature of beauty. Artistic creation and the role of images, myth, and ritual in various cultures. FALL. [3] Headrick.

173. Social Behavior of Nonhuman Primates. Behavior and appearance of nonhuman primates as responses to environmental and social factors. Diet, reproduction, and social interaction among lower primates, monkeys, and apes as a foundation for interpreting the origins of humans and their behavior. FALL. [3] Blom.

201. Introduction to Linguistics. (Also listed as Linguistics 201) Systematic study and analysis of human language. Formation of language sounds, sound systems, the structure of words, the structure of sentences, meaning, language change. Data from diverse languages of the world. SPRING. [3] Harris.

203. Anthropological Linguistics. (Also listed as Linguistics 203) An introduction to the study of language in its anthropological context. Topics include theories of the origin of language, prehistory of languages and language groups, the use of vocabulary as a guide to the ways societies classify their universe, and possible deterministic interrelationships between language and culture. [3] (Not currently offered)

206. Theories of Culture and Human Nature. Survey of the views of anthropological thinkers, from the late nineteenth century to the present, about the basic attributes of humankind and human culture. Comparison of different ideas of how people create culture and in turn are molded by culture. FALL. [3] Fischer.

207. Energy, Environment, and Culture. The relationship between human beings and the environments that sustain them. The global diversity of human ecological adaptations. Hunter-gatherers, pastoral nomads, slash-and-burn agriculturalists, and irrigation agriculturalists. Human impact on the environment. Theories of human ecological interaction. [3] (Not currently offered)

210. Peoples and Cultures of Latin America. Survey of Latin America, including both its native cultures and its Spanish and Portuguese heritage. Fundamental traditions of Latin America, including marriage and the family, the relationship between men and women, racial and ethnic identity, social class, and religion. Special attention to the organization of peasant communities, contemporary urban life, poverty, and economic development. SPRING. [3] Fischer.

211. Archaeology. An introduction to the methods used by archaeologists to study the nature and development of prehistoric societies. Approaches to survey, excavation, analysis, and interpretation are explored through lectures, case studies, and problem assignments. SPRING. [3] Fowler.

212. Ancient Mesoamerican Civilizations. Development of pre-Hispanic civilization in Mesoamerica from the beginnings of village life to the rise of the great states and empires: Olmec, Maya, Toltec, and Aztec civilizations. [3] (Offered 2001/02)

213. The Archaeology of the Ancient Maya Civilization. A case study in cultural evolution. Archaeological evidence and social theory on the enigmatic origins, complex nature, and sudden collapse of the ancient Maya civilization. Intensive classes at Vanderbilt followed by study and travel to the ruined Maya cities in the Peten jungle of Guatemala. [3] (Not currently offered)

214. North American Indians. A comparative survey of the Indian societies of North America, their archaeological origins, development, and changing adaptation to white society over the past four hundred years. [3] (Offered 2001/02)

216. Ancient Cities. Comparative examination of early cities in the Old World and pre-Columbian America. Analysis of social and economic processes supporting pre-industrial urbanism. Role of geography, ideology, trade, and settlement systems in the rise of early urban societies. FALL. [3] Estrada Belli.

217. Old World Archaeology. Ancient Cultures of the Old World. Archaeology of the Near East, Africa, Asia, and Oceania. The origins of the great civilizations of Egypt and Mesopotamia. The beginnings of cities, agriculture, trade, and empires in light of recent archaeological discoveries. SPRING. [3] Estrada Belli.

218. Reconstructing Prehistoric Economic Systems. Anthropological and economic theory in prehistoric archaeology. Methods for reconstructing prehistoric economic systems. Models for production and exchange. [3] (Not currently offered)

220. Peoples and Cultures of Mexico. Indian, peasant, and urban cultures in Mexico from late pre-Hispanic times to the present. Ethnic and regional diversity, urban-rural relationships, class structure, and national integration. FALL. [3] Monaghan.

223. Anthropology of War. Theoretical discussion and cross-cultural comparison of the causes and nature of war and human aggression. Conflict resolution and peace systems. Case studies ranging from primate groups to less complex societies to high civilization. [3] (Not currently offered)

224. Political Anthropology: Crosscultural Studies in Conflict and Power. Comparative and ethnographic analysis of political and legal systems. Formal and informal means of control in egalitarian and hierarchical societies. Anthropological theories of power, authority, influence, and leadership. Social and cultural dimensions of conflict, consensus, competition, and dispute resolution. [3] (Not currently offered)

225. The Archaeology of Ancient Asia. Development of Asian culture from the Ice Age hunter-gatherers to the first civilizations of China, Japan, Thailand, Indochina, Indonesia, and the Philippines. [3] (Not currently offered)

226. Myth, Ritual, Belief: The Anthropology of Religion. Cross-cultural survey of religious and ritual beliefs in light of theories of religion. Topics include sacrifice, myth, witchcraft, divination, religious change, and millenarian movements. FALL. [3] Monaghan.

228. Family, Marriage, and Kin. The family, household, division of labor, and obligations of kinship in non-Western societies. Marriage, age and gender, and kinship networks in relation to economics and political life. Comparisons with kinship in Western cultures. [3] (Not currently offered)

229. North American Archaeology. The origins of native North American culture. Migration from Asia, early hunters and gatherers, and the extinction of ancient fauna. Evolution of social complexity, ecological adaptations, and prehistoric interaction as seen in the archaeological record of the continent. [3] (Not currently offered)

230. Environment and Archaeology. Human impact on environment, subsistence, and settlement. The contribution of archaeology, geology, and botany to human ecology. [3] (Not currently offered)

233. Culture, Ecology, and International Development. Theories of development and social change in Third World societies. Case studies of development programs in peasant and tribal communities in Asia, Africa, and Latin America. Ecological, social, and political issues in problems of food and agriculture, rain forest development, and grassroots development strategies. [3] (Not currently offered)

234. Economic Anthropology. Modern and postmodern cultural organization of Western and non-Western economies. Crosscultural comparison of concepts of self-interest and rationality; relation of the growth of post-industrial (service and information) economies to economic strategies of ethnic groups; survey of indigenous alternatives to development. Theoretical issues grounded in case studies from our own and other cultures. SPRING. [3] Fischer.

237. Ethnicity, Race, and Culture. Key concepts used in the history of anthropology to explain social diversity; theories of racial typology, cultural traditions, and ethnic identity. Role of rituals and symbols in expressing social identity and group membership. Cross-cultural comparison of pluralistic and homogeneous societies. Relation of ethnicity to ties of kinship, language, heritage, religion, and nationality. Changes in interethnic relations through assimilation, acculturation, cooperation, and polarization. [3] (Not currently offered)

240. Medical Anthropology. Biocultural aspects of human adaptations to health, disease, and nutrition. Non-Western medical and psychiatric systems. Effects of cultures on the interpretation, diagnosis, and treatment of illness. Case studies from Africa, Oceania, Latin America, and the contemporary United States. SPRING. [3] Conklin.

245. Art of Pre-Columbian America. (Also listed as Fine Arts 245) The great artistic traditions of pre-Columbian America, including the Aztec, Maya, Inca, and native North American. Styles, symbolism, and the role of art in native politics, history, and religion. SPRING. [3] Headrick.

247. The Aztecs. Origins of the Aztec peoples of central Mexico and their culture; history and structure of the Aztec empire; pre-Columbian social, political, and economic organization; warfare and religion; the Spanish conquest; colonial society in central Mexico; ethnographic study of modern descendants of the Aztecs. SPRING. [3] Fowler.

248. Ancient Empires and Civilizations of South America. Introduction to the archaeology and peoples of ancient South America. Early hunters and gatherers, origins of agriculture and urbanism, and the rise and fall of the Huari and Inca empires. FALL. [3] Janusek.

249. Indians of South America. Hunters and gatherers, tropical forest peoples, chiefdoms, and great civilizations of native South America. Portuguese and Spanish influences. Emphasis on major anthropological studies and comparisons with other cultural areas. [3] (Not currently offered)

250. Shamanism and Spiritual Curing. A crosscultural inquiry into shamanism and sorcery. Examines altered states of consciousness, hallucinogens, spirit possession, and non-traditional techniques of curing. Contrasts shamanism with Western approaches to curing. Implications for religion, theories of the mind, and dream analysis. (Offered 2001/02)

251. Chiefdoms. The origins, evolution, and organization of the world's chiefdoms and other pre-state societies. The rise of social stratification and political hierarchies. The organization of production and exchange. A comparative perspective with ethnographic, historical, and archaeological evidence. [3] (Not currently offered)

253. Ancient Civilizations of Mexico. Development, nature, and collapse of the great Pre-Columbian civilizations of Mexico. Origins of agriculture and complex society; rise of the enigmatic Olmec civilization; development of Teotihuacan; and the militaristic empires of the Toltecs and Aztecs. Religion, politics, and social process. Recent controversies and ongoing archaeological excavations. FALL. [3] Demarest.

254. The Inca Empire. The rise and fall of the Inca state in the Southern American Andes. Inca society, agriculture, economy, warfare, ancestor worship, mummies, and royal wealth. Imperial expansion, the role of the feasting in Inca politics, and place of ecology in Inca reli-

gion. Destruction of the empire during the Spanish conquest; persistence of pre-Columbian culture among Inca descendants in Peru and Bolivia. SPRING. [3] Janusek.

255. Native American Art. The art and great aesthetic traditions of the native peoples, emphasizing North America, including the Southwest, Northwest Coast, and the Plains. The relationship of art to social life, myth, and religion. Changes since contact with European cultures. [3] (Offered 2001/02)

256. Art of the Maya. (Also Fine Arts 256) Architecture, painting, and sculpture from 100 B.C. to artistic traditions of contemporary Maya peoples. Ritual, religion, mythology, and politics. SPRING. [3] Headrick.

257. Mesoamerican Art. (Also listed as Fine Arts 257) Worldview as expressed by painting, sculpture, and architecture from 2000 B.C. through the sixteenth century. Impact of religion and politics on the cities of the Olmec, Zapotec, and Aztec as seen through their artistic traditions. FALL. [3] Headrick.

260. Medicine, Culture, and the Body. (Also listed as History 206 and Science, Technology, and Humanities 260) Concepts of the human body from historical and cross-cultural perspectives. Exploration of experiences, representations, and medical theories of the body in birth, death, health, and illness in Western and non-Western societies. Comparison of methodologies of anthropology and history. [3] (Not currently offered)

263. Myth and Legend: The Anthology of Oral Tradition. Narrative traditions and folklore of Western and non-Western cultures. Myths of world creation, human origins, and transformation. Relationship of myth to dream, historical narrative, and social organization. Myth telling and performance. The structure and theory of myth. [3] (Offered 2001/02)

265. Psychological Anthropology. (Also listed as Sociology 265) How personality and culture affect each other. Socialization and the life cycle, the definition of sex roles, individual psychology and group aggression, religion and group personality, and the nature of mental illness and normalcy in non-Western societies. SPRING. [3] Gregor.

266. Gender and Cultural Politics. (Also listed as Women's Studies 266) Cross-cultural comparison of women's roles and status in western and non-Western societies. Role of myths, symbols, and rituals in the formation of gender identities and the politics of sexual cooperation, conflict, and inequality. Case studies from Africa, the Middle East, Europe, North and South America, Asia, and Melanesia. [3] (Not currently offered)

270. Human Osteology. Growth, development, and alteration of the human skeleton. Determination of age, sex, stature, and ethnicity from bones and teeth. Archaeological skeletal remains for diagnosis of disease and identification of cultural practices. Use of human remains in criminal investigation. Three lectures and one laboratory period per week. [4] (Offered 2001/02)

271. Human Evolution. Structural and behavioral changes in hominids leading to modern *Homo sapiens*. Evolutionary theory, paleontological evidence, and nonhuman primates as the bases for interpreting sequential development of pre-modern humans. Prerequisite: 103. FALL. [3] Blom.

272. Human Variation. Biological differences among contemporary human groups. Adaptational features of humans as biological organisms. Use of biological variation for understanding human history and geographic distribution. SPRING. [3] Blom.

273. Primate Evolution. Evolution and diversification of primate order from the first primates to the rise of the Great Apes. Skeletal anatomy, evolutionary theory, and living primates as bases for exploring the development of nonhuman primates. Prerequisite: 103 or 173. [3] (Offered 2001/02)

284. Problems in Anthropological Theory. An advanced seminar in anthropological theory: cultural evolution, cultural history, ethnic relations, cultural ecology, archaeological method and theory, social structure, political organizations, religious institutions. SPRING. [3] Monaghan.

288a–288b. Independent Research. Readings on selected topics (of the student's choice) and the preparation of reports. FALL, SPRING, SUMMER. [Variable credit: 1–3 each semester] Staff.

289. Field Research. Directed field research (on topics of the student's choice). FALL, SPRING, SUMMER. [Variable credit: 1–6 each semester] Staff.

294. Special Topics. FALL. [3] Staff.

298. Honors Research. Research to be done in consultation with a member of the faculty in anthropology. Open only to those beginning honors work in anthropology. FALL, SPRING. [Variable credit: 1–6 each semester; may be repeated to a maximum of 6] Staff.

299. Honors Thesis. Open only to seniors in the departmental honors program. Students completing this course with distinction, including a thesis and final examination, will earn honors in anthropology. Prerequisite: 298. FALL, SPRING. [Variable credit: 1–6 each semester; may be repeated to a total of 6] Staff.

302. Quantitative Methods in Anthropology. [3]

303. Seminar in Maya Ethnography. [3]

307. Human Variation and Osteology. [3]

309. Seminar in Culture Ecology. [3]

310. Archaeological Method and Theory. FALL. [3] Fowler.

311. Advanced Archaeological Methods. FALL. [3] Estrada Belli.

313. Yucatec Maya Language and Literature. [3]

315. Seminar on Cultural Evolution. [3]

316. Anthropology of Adaptation. [3]

320. Seminar in Ethnography. [3]

321. Seminar in Social Organization. [3]

322. Culture, Structure, Personality. [3]

325. The Collapse of Civilizations: General Theories and the Maya Collapse. FALL. [3] Demarest.

350. Seminar in Mesoamerican Archaeology. [3]

355. Seminar in Mesoamerican Art. SPRING. [3] Headrick.

Arabic

Students seeking more information regarding Arabic courses may consult the chair of the Department of Religious Studies.

210a–210b. Introductory Classical Arabic. An introduction to classical Arabic starting with Arabic script and grammar. Reading of simple classical Arabic texts. No prior knowledge of Arabic required. [3–3]

Biological Sciences

CHAIR James V. Staros

DIRECTOR OF UNDERGRADUATE STUDIES (BioSci and EEOB majors)

David E. McCauley

DIRECTOR OF UNDERGRADUATE STUDIES (MCB major) Wallace M. LeSturgeon

DIRECTOR OF GRADUATE STUDIES Todd R. Graham

PROFESSORS EMERITI Burton J. Bogitsh, Robert Kral, Oscar Touster

PROFESSORS Clint E. Carter, Ellen Fanning, Sidney Fleischer, Hans-Willi Honegger,

Carl H. Johnson, Wallace M. LeSturgeon, David E. McCauley, Gisela Mosig,

Terry L. Page, Charles K. Singleton, James V. Staros, Gerald J. Stubbs,

Dean P. Whittier, Robley C. Williams, Jr.

ASSOCIATE PROFESSORS Martin Egli, William G. Eickmeier, Todd R. Graham,

Thomas N. Oeltmann, James G. Patton, Nils Olof Pellmyr, John H. Venable

RESEARCH ASSOCIATE PROFESSOR J. Oliver McIntyre

ASSISTANT PROFESSORS Bruce H. Appel, Daniel J. Funk, Andrzej M. Krezel,

Lilianna Solnica-Krezel, Laurence J. Zwiebel

RESEARCH ASSISTANT PROFESSOR Vladimir N. Podust

SENIOR LECTURER Mark A. Woelfle

I THE biological sciences encompass the study of living organisms and life processes at all levels: ecosystems, populations, individual organisms, tissues, cells, subcellular structures, and molecules. The Department of Biological Sciences offers courses that address all of these levels and programs of study for undergraduates and for graduate students seeking the Ph.D.

For undergraduates, the Department offers three majors and a minor. All three majors have Honors tracks. The Biological Sciences (BioSci) major is designed for the student seeking a broad base in the biological sciences, though it is a highly flexible program that allows a certain amount of specialization in upper level courses. The Molecular and Cellular Biology (MCB) major is designed for students with an interest in developing an in-depth understanding of how living systems function at the molecular and cellular levels, with upper level course options ranging in content from biophysics and biochemistry to developmental biology, and to molecular aspects of evo-

lution and of toxicology. The Ecology, Evolution, and Organismal Biology (EEOB) major is designed for students with an interest in ecology, evolutionary biology, environmental biology, and conservation biology. The Department also offers a minor in Biological Sciences for students majoring in other disciplines. Interested students should consult the appropriate DUS.

The Department offers undergraduates opportunities for engaging in faculty-led research projects for course credit. Students may receive an introduction to the workings of a scientific laboratory through an internship, or a more intensive, hands-on experience in directed or independent laboratory research. Students on the honors track of any of the three majors carry out a major honors research project and write an honors thesis. More information about the majors and minor offered by the department, the honors track of each major, and research opportunities open to undergraduates is available at our Web site: www.biosci.vanderbilt.edu.

General Requirements

All students in Programs of Concentration offered by the Department of Biological Sciences must take two semesters of general chemistry and lab (Chemistry 102a,b and 104a,b or Chemistry 103a,b) and two semesters of organic chemistry and lab (Chemistry 219a,b and 220a,b). A total of 30 hours of Biological Sciences courses, including the 8 hours of 110a,b and 111a,b, are required in all majors. All Biological Sciences courses count toward the major *except* 100, 101, 105, and 115. Below is a listing of the required courses for the Biological Sciences (BioSci) major, for the Molecular and Cellular Biology (MCB) major, and for the Ecology, Evolution, & Organismal Biology (EEOB) major. Students with specialized interests within either of the specialized majors may substitute one of the intermediate courses with an upper level course with the permission of the DUS and the Biological Sciences Curriculum Committee. (*Intermediate Biological Sciences courses: 201, 202, 205, 210, 211, 218, 219, 220, 221*).

Students may declare only one of the majors offered by the Department of Biological Sciences; double or triple majors within the department are not permitted.

For Honors in all three majors, additional requirements must be met: a) normally a minimum GPA of 3.25 in courses that count toward the major; b) at least 10 of the 30 hours of Biological Sciences course work must be directed/independent research with a minimum of 8 hours being Honors research (BSCI 296); c) an Honors thesis and oral defense. For students in the MCB major, 265 must be taken; an alternate advanced course may be substituted with the permission of the DUS. For students in the EEOB major, one of the following courses must be taken: 223, 224, 230, 238, 239, 247, 257, 270. For the BioSci major, at least two lecture courses must be at a course number level of greater than 221.

Program of Concentration in Biological Sciences (BioSci)

At least 30 hours satisfying the general requirements above, and including the following:

Introductory Courses

BSCI 110a, BSCI 110b and labs (111a, 111b)

Intermediate Courses

205, 210, and one other intermediate lecture course; at least one laboratory course

Laboratory

One laboratory course, other than those indicated above. This requirement may be fulfilled with two semesters of directed and/or independent research (BSCI 283, 286).

Seminar/ Independent Studies

A minimum of 2 credit hours of 275, 282, 283, 286, or 296 is required. Only one seminar (275) may count toward the major. A total of no more than 6 credit hours of 282, 283, and 286 may be counted toward the major.

For students intending to perform Honors research, at least two Biological Sciences lecture courses must have a course number of greater than 221.

Program of Concentration in Molecular and Cellular Biology (MCB)

At least 30 hours satisfying the general requirements above, and including the following:

Introductory Courses

BSCI 110a, BSCI 110b and labs (111a, 111b)

Intermediate Courses

201, 202, 210, 211, and 220

Seminar/ Independent Studies

A minimum of 2 credit hours of 275, 282, 283, 286, or 296 is required. Only one seminar (275) may count toward the major. A total of no more than 6 credit hours of 282, 283, and 286 may be counted toward the major.

Of the remaining courses, at least two must be from the following: 205, 226, 227, 230, 240, 247, 249, 252, 255, 258, 262, 265, 273, 274, Honors Research (296).

For students intending to perform Honors research in the MCB major, 265 must be taken; an alternate advanced lecture course may be substituted with the permission of the DUS.

Program of Concentration in Ecology, Evolution, and Organismal Biology (EEOB)

At least 30 hours satisfying the general requirements above, and including the following:

Introductory Courses

BSCI 110a, BSCI 110b and labs (111a, 111b)

Intermediate Courses

205, 210, and 218 or 219

Seminar/ Independent Studies

A minimum of 2 credit hours of 275, 282, 283, 286, or 296 is required. Only one seminar (275) may count toward the major. A total of no more than 6 credit hours of 282, 283, and 286 may be counted toward the major.

Laboratory

One laboratory course, other than those indicated above, is required. This requirement may be fulfilled with two semesters of directed and/or independent research (BSCI 283, 286).

Of the remaining courses, at least two must be from the following: 223, 224, 230, 238, 239, 247, 257, 270, 273, Honors Research (296).

For students intending to perform Honors research in the EEOB major, one of the following courses must be taken: 223, 224, 230, 238, 239, 247, 257, 270.

Minor in Biological Sciences

A minor in Biological Sciences requires a minimum of 18 hours made up as follows: a) 8 hours of BSCI 110a,b and 111a,b; b) 210 and one other intermediate lecture course; c) two other Biological Sciences courses, at least one of which must be a 3 hour lecture course, excluding 282, 283, 286, and 296.

Biological Sciences 110a–110b and 111a–111b serve as prerequisites for all higher numbered courses (except 115) for students in any of the three majors or the minor offered by the Department. Biological Sciences 100 may serve as a prerequisite to Biological Sciences 205, 218, 219, or 270 for students who do not wish to pursue any of the majors or the minor offered by the Department but who wish to take more than one course in the field.

100. General Biology. (Also listed as Biology 100) An introduction to the structure and function of animals and plants. Three lectures and one laboratory period per week. FALL, SPRING. [4] Staff.

101. Fundamentals of Biology. (Also listed as Biology 101 and Molecular Biology 101) An overview of biology: cell biology; genetics, including human genetics; recombinant DNA technology; evolution; behavior; plant physiology; and animal physiology. Three lectures and one laboratory period each week. Open only to candidates for teacher licensure. Not open to students who have completed a college biology course. FALL. [4] Staff.

105. Human Biology: Heredity and Society. (Also listed as Biology 105) The social, legal, and ethical implications of recent advances in human genetics. Not intended for students majoring in the biological sciences. SPRING. [3] Johnson.

110a–110b. Introduction to Biological Sciences. An integrative approach to the science of life from molecules to ecosystems. 110a: molecules of life; cell structure and reproduction; energy production; Mendelian and population genetics; populations, communities, and ecosystems. 110b: intracellular information processing; extracellular communication and physiology; organismal development; evolution. Ordinarily accompanied by 111a–111b. Prerequisite: Chemistry 102a (with 104a) or 103a. Corequisite: Chemistry 102b (with 104b) or 103b. 110a, SPRING; 110b, FALL. [3–3] Staff.

111a–111b. Biological Sciences Laboratory. Laboratory to accompany 110a–110b. Corequisite: 110a–110b. One three-hour laboratory per week. 111a, SPRING; 111b, FALL. [1–1] Staff.

115. Freshman Seminar.

201. Introduction to Cell Biology. (Also listed as Biology 201 and Molecular Biology 201) Structure and function of cells, subcellular organelles, and macromolecules. Fundamentals of organelle function, membrane transport, energy production and utilization, cell motility, cell division, intracellular transport and mechanisms of signal transduction. Prerequisite: Biological Sciences 110a–110b. SPRING. [3] Graham, Zwiebel.

202. Cell Biology Laboratory. (Also listed as Biology 202 and Molecular Biology 202) One three-hour laboratory and discussion period per week. May only be taken concurrently with or following 201. SPRING. [1] Graham, Zwiebel.

205. Evolution. (Also listed as Biology 205) Evolutionary theory, with emphasis on evolutionary mechanisms. Microevolutionary processes of adaptation and speciation and macroevolutionary patterns. Evidence from genetics, ecology, molecular biology, and paleontology in the historical context of the neo-Darwinian synthesis. Three lectures per week. No credit for graduate students in biology. SPRING. [3] McCauley.

210. Principles of Genetics. (Also listed as Molecular Biology 210) Basic principles and mechanisms of inheritance discussed and related to other biological phenomena and problems. Prerequisite: 110a–110b. SPRING. [3] Appel, Solnica-Krezel.

211. Genetics Laboratory. (Also listed as Molecular Biology 211) One three-hour laboratory and discussion period per week. May only be taken concurrently with or following 210. SPRING. [1] Woelfle.

218. Introduction to Botany. (Also listed as Biology 129) Structure and function of plants, employing a survey of anatomical and morphological systems. Three lectures and one laboratory period per week. FALL. [4] Whittier.

219. Introduction to Zoology. (Also listed as Biology 119) A structural and functional study of the major animal groups. The problems presented to animals by their environments, and the anatomical and physiological mechanisms by which they adapt. Three lectures and one laboratory period per week. SPRING. [4] Staff.

220. Biochemistry I. (Also listed as Molecular Biology 220) Structure and mechanism of action of biological molecules, proteins, nucleic acids, lipids, polysaccharides. Enzymology. Carbohydrate metabolism. Prerequisite: 110a–110b and Chemistry 220a–220b. FALL, SPRING. [3] Stubbs, Krezel.

221. Biochemistry Laboratory. (Also listed as Molecular Biology 221) Biochemical techniques; illustrations and applications of biochemical principles. Prerequisite: Chemistry 219a–219b and 220a–220b and pre- or corequisite 220. [1] (Not currently offered)

222. Reproduction and Development in Plants. (Also listed as Biology 223) Structure, function, and development of tissues and reproductive mechanisms of representative land plants (mosses, ferns, and seed plants). Three lectures and one laboratory period per week. FALL. [4] Whittier.

223. Insect Ecology. (Also listed as Biology 220) Principles of insect ecology from individual to ecosystem level. Life history diversity, including parasite-host, predator-prey, and herbivore-plant relations and their consequences at all levels of organization. Population dynamics and demography; community composition and dynamics. Conservation biology. [3] (Not currently offered).

224. Biology of Insects. (Also listed as Biology 218) An introductory survey of insects, with emphasis on diversity, taxonomy, and ecology. Two lectures and two laboratory periods per week before spring break; seven days intensive field work at Archbold Biological Station, Florida, during spring break; then individual study and final report preparation. [4] (Not currently offered)

226. Introduction to Immunology. (Also listed as Biology 228 and Molecular Biology 228) The molecular and cellular basis of immunity. Emphasis on molecular structure, the genetic origin of diversity in B-cell and T-cell receptors, antigen presentation, and the cellular interactions leading to the immune response. Tolerance, tumor and transplantation immunity, autoimmune and immunodeficiency diseases, and allergy. Prerequisite: 201 or 210. SPRING. [3] Carter.

227. Developmental Biology of Microorganisms. Molecular basis of developmental programs in microorganisms. Emphasis on regulation of programs and signaling mechanisms underlying cell-environment and cell-cell interactions involved in the regulation. *Bacillus subtilis*, *Myxococcus xanthus*, *Caulobacter crescentus*, and *Dictyostelium discoideum*. Prerequisite: 210 and 265. SPRING. [2] Singleton.

230. Biological Clocks. (Also listed as Biology 230) Study of innate mechanisms for measurement of time in living organisms. Emphasis on the functional significance and physiological basis of biological clocks in animals and humans. Topics include circadian rhythms, time-compensated celestial navigation, photoperiodism, and the role of biological clocks in human behavior. Not open to students who have taken 115: Biological Clocks and Human Behavior. SPRING. [3] Staff. (Not currently offered)

238. Ecology. (Also listed as Biology 238) Development and structure of biological communities; interactions of environmental factors and of organisms within a community. Three lectures and one laboratory period per week, including field trips. FALL. [4] Eickmeier.

239. Behavioral Ecology. (Also listed as Biology 239) An evaluation and synthesis of some of the important problems at the interface of behavior and ecology. Evolution of society, kin selection and altruism, behavioral mechanisms of population regulation and competition, foraging theory, behavioral aspects of predator-prey interactions, courtship and mating systems, sociobiology and its implications. Three lectures and one discussion period per week. FALL. [4] Althoff.

240. Developmental Biology. (Also listed as Biology 240 and Molecular Biology 240) Genetic, molecular, and cellular mechanisms underlying development of eukaryotic organisms with emphasis on insects and vertebrate animals. Topics include regulation of gene expression during developmental processes, specification of embryonic polarity, genera-

tion and patterning of germ layers, organogenesis, axonal specificity, evolution of chordate body plan. Prerequisite: 201 or 210. FALL. [3] Solnica-Krezel, Zwiebel.

242. Advanced Developmental Biology: Vertebrate Organogenesis. Cellular and molecular regulation of the morphogenetic processes that shape vertebrate tissues and organs. Emphasis on development of digestive, respiratory, hematopoietic, cardiovascular, urogenital, sensory and nervous systems. Where appropriate, correlation to invertebrate development and reference to evolutionary changes in organ structure and function. Prerequisite: 240. [3] Appel, Bader (Medicine and Cell Biology). (Offered spring 2002)

247. Molecular Evolution. (Also listed as Biology 247 and Molecular Biology 247) The theory of evolution at the molecular level. The evolution of DNA and RNA sequences, proteins, and genome structures will be studied using models from population genetics and comparative approaches. Molecular clocks, the evolution of gene regulation and globin genes, molecular phylogeny, and human evolution. Prerequisite: 210 or 205. FALL. [3] Funk.

249. Viruses. (Also listed as Molecular Biology 249) Scientific principles from virology and their applications in medicine, public health, and agriculture, related economic and anthropological issues and changing scientific paradigms. Mechanisms and controls of nucleic acid replication, transcription, translation, virus-host interactions, and virion architecture, in the context of present knowledge and historical perspectives. Prerequisite: 210 or 220. FALL [3] Mosig.

252. Cellular Neurobiology. (Also listed as Biology 252) Structure and function of nerve cells. Emphasis on electrical excitability, synaptic transmission, and sensory transduction. Cellular mechanisms underlying simple behaviors, sensory information processing, and learning and memory. FALL. [3] Page.

253. Laboratory in Neurobiology. (Also listed as Biology 253) Laboratory studies focusing on experimental methods in neurophysiology. Introduction to techniques for recording membrane potentials, studying synaptic transmission, and analyzing neural mechanisms involved in sensory information processing and regulation of behavior. Pre- or corequisite: 252. FALL. [1] Staff.

254. Neurobiology of Behavior. (Also listed as Biology 254) Nerve cell interactions in neuronal networks of the central nervous system of animals and their impact for regulating behavior. Sensory systems, sensory-motor integration, central processing of information, neuronal-hormonal interactions, and brain anatomy and organization in invertebrates and vertebrates. SPRING. [3] Staff.

255. Cell Physiology. (Also listed as Molecular Biology 255) Molecular biology of cell function and organization with emphasis on higher animals. Emphasis on macromolecular basis of action of cells, organelles and membranes, energy interconversions, nerve conduction, cell regulation, motility, and multicellularity. Prerequisite: 220. SPRING. [3] Fleischer.

257. Plant-Animal Interactions. (Also listed as Biology 262) Ecology and evolution of species interactions at individual, population, and community levels; coevolution; pollination biology; fruit and seed dispersal; mammal and insect herbivore and plant defense mechanisms; ant-plant and animal-fungus interactions. Prerequisite: 205. FALL. [3] Pellmyr.

258. Vertebrate Physiology. Fundamental mechanisms of the major vertebrate physiological systems with an emphasis on humans. Special physiological adaptations of vertebrates to their environment (respiration of aquatic animals, birds, and deep diving mammals; salt balance in fresh and salt water environments; altitude adaptation). Prerequisite: 201 or 220. [4] (Offered 2001/02)

259. Physiology Laboratory. Laboratory to accompany 258. Experiments investigating major physiological processes (glucose-glycogen-protein metabolism, enzyme regulation during starvation; exertion, digestion, blood circulation, respiration, cold adaptation). May only be taken concurrently with, or following, 258. One three-hour laboratory per week. [1] Honegger. (Offered 2001/02)

262. Bimolecular Interactions. (Also listed as Molecular Biology 262) Energetics and kinetics of interactions between proteins and nucleic acids and their ligands. Topics include cooperativity, allostery, rates of binding reactions. Students will gain direct experience in computer use, but no programming is required. Prerequisite: 220 and Physics 117a–117b. One lecture and two calculation sessions per week. FALL. [3] Williams.

265. Biochemistry II. (Also listed as Molecular Biology 265) Lipid, amino acid, and nucleotide metabolism. Biochemistry of the expression and transmission of genetic information. Molecular physiology. Prerequisite: 220. SPRING. [3] Fanning, Williams.

270. Statistical Methods in Biology. (Also listed as Biology 270) An introduction to statistical methods used in the analysis of biological experiments, including the application of computer software packages. Emphasis on testing of hypotheses and experimental design. Topics include descriptive statistics, analysis of variance, regression, correlation, contingency analysis, and the testing of methods for sampling natural populations. FALL. [3] McCauley. (Offered 2001/02)

273. Molecular Mechanisms of Environmental Toxins. (Also listed as Molecular Biology 273) Molecular interactions of environmental toxins with specific subcellular components and biochemical basis of their toxicity. Environmental mutagens, heavy metals, synthetic estrogens and other analogs of natural substrates, oxidants, and the question of synergy. Prerequisite: 220 and either 210 or 265. FALL. [3] LeSturgeon.

274. Protein Design. (Also listed as Molecular Biology 277) Protein structural motifs and their underlying physical principles. Methods of protein structural analysis, experimental and theoretical, including the use of computer graphics, database searching and analysis, and structural prediction. The design and expression of mutant, chimeric, and de novo proteins. Prerequisite: 210 and 220. FALL. [3] Staros, Egli.

275a–275b. Undergraduate Seminar. Discussions and papers based on readings in original research journals. Specific topics listed in the *Schedule of Courses*; further information from the listed instructor. May be taken for credit more than once, but only two hours count toward the major. Prerequisite: fulfillment of the intermediate course requirements for the major. FALL, SPRING. [2–2]

280a–280b. Research Internship. Internship credit for work in the laboratory of a member of the Biological Sciences faculty. A term paper on the research of the laboratory will be required. Prerequisite: 110a. Prerequisite or Corequisite: 110b. FALL, SPRING. [1 credit only per semester; course may be repeated to a total of 2 credits] LeSturgeon, McCauley, coordinators.

282. Independent Reading. Reading and discussion of research papers with a member of the faculty. Permission to enroll by arrangement before the end of the previous semester. May be taken for credit twice. Prerequisite: consent of Biological Sciences 282 coordinator. FALL, SPRING. [1] Staff; LeSturgeon, McCauley, coordinators.

283. Directed Laboratory Research. Directed student research on a project conceived by a member of the Biological Sciences faculty. Enrollment by arrangement before the end of the previous semester. May be taken only once. Prerequisite: consent of Biological Sciences 283 coordinator, overall grade point average of B. FALL, SPRING. [Variable credit: 2–4] Staff; Staros, Williams, coordinators.

286. Independent Laboratory Research. Original student research on a defined problem in Biological Sciences and under the supervision of Biological Sciences faculty. Some independence in the design and execution of the problem. Enrollment by arrangement before the end of the previous semester. May be taken for credit more than once. Prerequisite: consent of Biological Sciences 286 coordinator, overall grade point average of B. FALL, SPRING. [Variable credit: 2–6] Staff; coordinators, LeStourgeon, McCauley.

296. Honors Research. Open only to majors in honors program. May be taken for credit more than once. FALL, SPRING. [Variable credit: 4–6] Staff; coordinators, LeStourgeon, McCauley.

Biology

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DIRECTOR OF GRADUATE STUDIES Nils Olof Pellmyr

DIRECTOR OF HONORS AND INDEPENDENT STUDIES Hans-Willi Honegger

PROFESSORS EMERITI Burton J. Bogitsh, Robert Kral

PROFESSORS Clint E. Carter, Hans-Willi Honegger, Carl H. Johnson, David E. McCauley,

Terry L. Page, Dean P. Whittier

ASSOCIATE PROFESSORS William G. Eickmeier, Nils Olof Pellmyr

ASSISTANT PROFESSORS Dan Funk, Larry Zwiebel

I THE Departments of Biology and Molecular Biology are in the process of joining together to form the Department of Biological Sciences, a process that will be complete by the end of the 2001/2002 academic year. Students who anticipate graduating after May 2002 should, therefore, consult the Biological Sciences entry in this catalog for information on course offerings and major requirements. Students who formally declared majors in Biology or Molecular Biology prior to the end of the 1999/2000 academic year may complete those majors.

The province of the Department of Biology is broad—encompassing all fields of biology above the molecular level and including botanical and zoological aspects of populations, organisms, and cells. Three areas are emphasized: cell biology/physiology, organismal biology, and population biology/ecology. Majors in the Department of Biology take courses in each area. Selected courses from the Department of Molecular Biology may also be included in the program.

Course work consists of formal lectures, independent study, and laboratory and field experiences. Opportunities are available for summer study at various field stations, including Gulf Coast Research Laboratory in Mississippi and Mountain Lake Biological Station in Virginia.

Courses are designed to give superior students opportunity for further exercise and development of demonstrated talent; there is ample provision for pursuit of open-ended problems on an individual basis. Students are

encouraged to take independent library or laboratory work under faculty supervision during the junior and senior years.

A major in Biology is good preparation for careers in health-related professions—such as medicine, dentistry, public health, or physical therapy—as well as professions related to ecology and the environment.

Program of Concentration in Biology

Majors are required to complete a minimum of 30 hours in biology. Biological Sciences 110a–110b (described above) will count as 8 hours toward the major, and Biological Sciences 110a–110b is prerequisite for all other biology courses taken by students majoring in biology. In addition to the 30 hours in Biology, majors are required to take 8 hours of organic chemistry. Majors are required to take at least one course from each of the following three areas.

Cell biology/physiology:

201, 215, 228, 230, 240, 248, 252, 254, 256, 258

Organismal biology:

119, 129, 213, 217, 218, 223, 224

Population biology/ecology:

205, 227, 235, 238, 239, 247, 262, 270, 274

In addition to Biological Sciences 110a–110b, a minimum of three laboratory courses are required and must include courses from at least two of the areas defined above. For example, Biology 214 taken in addition to Biology 213, 250 taken in addition to 240, and 253 taken in addition to 252 will count as eligible laboratory courses. With the permission of the Director of Honors and Independent Study, 4 credits (2 semesters) of Biology 292 may be substituted for one lab course, provided that the two remaining laboratory courses are from two different areas.

The 300-level courses in the department may count toward the 30 hours for undergraduate majors with the consent of the appropriate instructor and the Dean for Graduate Studies and Research. The remaining hours may include no more than 2 hours in 280, 291, and 292. Majors are encouraged to take Biology 290, 291, and 292; 290, however, will not count as major hours. Majors may include a maximum of 8 hours from Molecular Biology 210, 211, 220, and 265 in the required 30 hours.

Honors Program

Students who elect the honors program will have an opportunity to acquire insight into and achieve depth in the particular area of study they undertake. The portion of the program designed for the junior year will provide for gradually decreasing staff supervision, with the expectation that work undertaken during the senior year may be truly independent in character.

Prospective majors who meet the general College standards for admission to honors study are encouraged to initiate discussions with the department

chair, with the director of honors and independent studies, or with individual faculty members concerning the departmental honors program. Normally, six semesters of biology and chemistry, combined, will be considered a minimum for entering the honors program, but this requirement may be modified in special cases.

Honors candidates must take not less than 10 hours of independent study, which may include courses 280, 291, 292, and at least 20 hours of formal course work, including all the normal requirements for a major. The candidate must present a senior thesis during the spring semester of the senior year and satisfactorily pass an honors examination administered at that time. Students interested in becoming honors candidates are urged to consult with the department as early as possible.

Licensure for Teaching

Candidates for teacher licensure in biology at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

101. Fundamentals of Biology. (Also listed as Biological Sciences 101 and Molecular Biology 101) An overview of biology: cell biology; genetics, including human genetics; recombinant DNA technology; evolution; behavior; plant physiology; and animal physiology. Three lectures and one laboratory period each week. Open only to candidates for teacher licensure. Not open to students who have completed a college biology course. FALL. [4] Staff.

105. Human Biology: Heredity and Society. (Also listed as Biological Sciences 105) The social, legal, and ethical implications of recent advances in human genetics. Not intended for students majoring in the biological sciences. SPRING. [3] Staff.

Starred course 100 is prerequisite for all courses in the department (except 101 and 105) taken by students who want to take additional biology courses but who are not biology majors. Biological Sciences 110a–110b serves as prerequisite for students majoring in biology.

★100. General Biology. (Also listed as Biological Sciences 100) An introduction to the structure and function of animals and plants. Three lectures and one laboratory period per week. FALL, SPRING. [4] Staff.

115. Freshman Seminar. Does not count toward major in biology. [3]

119. Introduction to Zoology. (Also listed as Biological Sciences 219) A structural and functional study of the major animal groups. The problems presented to animals by their environments, and the anatomical and physiological mechanisms by which they adapt. Three lectures and one laboratory period per week. SPRING. [4] Althoff.

129. Introduction to Botany. (Also listed as Biological Sciences 218) Structure and function of plants, employing a survey of anatomical and morphological systems. Three lectures and one laboratory period per week. FALL. [4] Whittier.

201. Introduction to Cell Biology. (Also listed as Biological Sciences 201 and Molecular Biology 201) Structure and function of cells, subcellular organelles, and macromolecules. Fundamentals of organelle function, membrane transport, energy production and utiliza-

tion, cell motility, cell division, intracellular transport and mechanisms of signal transduction. Prerequisite: Biological Sciences 110a–110b. SPRING. [3] Graham, Zwiebel.

202. Cell Biology Laboratory. (Also listed as Biological Sciences 202 and Molecular Biology 202) One three-hour laboratory and discussion period per week. May only be taken concurrently with or following 201. SPRING. [1] Graham, Zwiebel.

205. Evolution. (Also listed as Biological Sciences 205) Evolutionary theory, with emphasis on evolutionary mechanisms. Microevolutionary processes of adaptation and speciation and macro-evolutionary patterns. Evidence from genetics, ecology, molecular biology, and paleontology in the historical context of the neo-Darwinian synthesis. Three lectures per week. No credit for graduate students in biology. SPRING. [3] McCauley.

213. Biology of Parasitism. Studies of various types of symbiotic relationships with emphasis on parasitism. The nature, evolution, and physiology of human host-parasite relationships will be discussed. Three lectures per week. FALL. [3] (Not currently offered)

214. Parasitology Laboratory. Laboratory study of representative local forms. Field collections and laboratory experimentation illustrating some basic principles of parasitology. Two laboratory periods per week. May only be taken concurrently with 213. FALL. [2] (Not currently offered)

215. Comparative Animal Physiology. Physiological principles exemplified by the major animal groups in their adaptations to environmental conditions. Prerequisite: 201. Three lectures and one laboratory period per week. SPRING. [4] Honegger.

217. Invertebrate Zoology. Survey of the major invertebrate phyla except arthropods, emphasis on phylogenetic relationships, evolution, ecology, functional anatomy, and taxonomy with some reference to embryology and physiology. Three lectures and one laboratory period per week. SPRING. [4] (Not currently offered)

218. Biology of Insects. (Also listed as Biological Sciences 224) An introductory survey of insects, with emphasis on diversity, taxonomy, and ecology. Two lectures and two laboratory periods per week before spring break; seven days intensive field work at Archbold Biological Station, Florida, during spring break; then individual study and final report preparation. [4] (Not currently offered)

220. Insect Ecology. (Also listed as Biological Sciences 223) Principles of insect ecology from individual to ecosystem level. Life history diversity, including parasite-host, predator-prey, and herbivore-plant relations and their consequences at all levels of organization. Population dynamics and demography; community composition and dynamics. Conservation biology. [3] (Not currently offered)

221. Plants and Society. Plants in relation to human welfare. Origin and cultivation of plants—with emphasis on ecology and evolution. History of major food crops, medical botany, non-food crops, and agricultural issues such as biotechnology and sustainable agriculture. SPRING. [3] Marr.

223. Reproduction and Development in Plants. (Also listed as Biological Sciences 222) Structure, function, and development of tissues and reproductive mechanisms of representative land plants (mosses, ferns, and seed plants). Three lectures and one laboratory period per week. FALL. [4] Whittier.

224. Spring Flora. Identification, classification, description, and naming of vascular plants. Development of identification skills in the laboratory and the field; diversity and economic

significance (food, fiber, drugs, etc.) of selected major groups. Three lectures and one laboratory per week. SPRING. [4] (Not currently offered)

227. Ecological Physiology of Plants. Comparative study of physiological adaptations of plants to physical and biotic environmental factors. The ecological significance of such processes as carbon metabolism, water relations, nutrient relations, and energy exchange. Lecture and demonstrations. Prerequisite: 201. [3] (Not currently offered)

228. Introduction to Immunology. (Also listed as Biological Sciences 226 and Molecular Biology 228) The molecular and cellular basis of immunity. Emphasis on molecular structure, the genetic origin of diversity in B-cell and T-cell receptors, antigen presentation, and the cellular interactions leading to the immune response. Tolerance, tumor and transplantation immunity, autoimmune and immunodeficiency diseases, and allergy. Prerequisite: 201 or Molecular Biology 210. SPRING. [3] Carter.

230. Biological Clocks. (Also listed as Biological Sciences 230) Study of innate mechanisms for measurement of time in living organisms. Emphasis on the functional significance and physiological basis of biological clocks in animals and humans. Topics include circadian rhythms, time-compensated celestial navigation, photoperiodism, and the role of biological clocks in human behavior. Not open to students who have taken 115: Biological Clocks and Human Behavior. SPRING. [3] (Not currently offered)

234. Dendrology. An introduction to the taxonomy and silvical characteristics of trees, using local woody flora as well as the major woody components of forest types throughout the United States and Canada. Two lectures and two laboratory periods per week, and field trips. [4] (Not currently offered)

235. Marine Biology. Analysis of diversity among plankton, plants, invertebrates, and vertebrates. Marine ecology, biology of fisheries, mariculture. FALL. [3] (Not currently offered)

238. Ecology. (Also listed as Biological Sciences 238) Development and structure of biological communities; interactions of environmental factors and of organisms within a community. Three lectures and one laboratory period per week, including field trips. FALL. [3] Eickmeier.

239. Behavioral Ecology. (Also listed as Biological Sciences 239) An evaluation and synthesis of some of the important problems at the interface of behavior and ecology. Evolution of society, kin selection and altruism, behavioral mechanisms of population regulation and competition, foraging theory, behavioral aspects of predator-prey interactions, courtship and mating systems, sociobiology and its implications. Three lectures and one discussion period per week. FALL. [4] Althoff.

240. Developmental Biology. (Also listed as Biological Sciences 240 and Molecular Biology 240) Genetic, molecular, and cellular mechanisms underlying development of eukaryotic organisms with emphasis on insects and vertebrate animals. Topics include regulation of gene expression during developmental processes, specification of embryonic polarity, generation and patterning of germ layers organogenesis, axonal specificity, evolution of chordate body plan. Prerequisite: 201 or 210. FALL. Solnica-Krezel, Zwiebel.

247. Molecular Evolution. (Also listed as Biological Sciences 247 and Molecular Biology 247) The theory of evolution at the molecular level. The evolution of DNA and RNA sequences, proteins, and genome structures will be studied using models from population genetics and comparative approaches. Molecular clocks, the evolution of gene regulation and globin genes, molecular phylogeny, and human evolution. Prerequisite: 210 or 205. FALL. [3] Funk.

248. Animal Histology and Histochemistry. The study of animal tissues and the procedures for the identification and localization of specific molecules within them. Prerequisite:

Chemistry 220b. Three lectures and two two-hour laboratory periods per week. [4] (Not currently offered)

252. Cellular Neurobiology. (Also listed as Biological Sciences 252) Structure and function of nerve cells. Emphasis on electrical excitability, synaptic transmission, and sensory transduction. Cellular mechanisms underlying simple behaviors, sensory information processing, and learning and memory. Prerequisite: 201 or 110b. FALL. [3] Page.

253. Laboratory in Neurobiology. (Also listed as Biological Sciences 253) Laboratory studies focusing on experimental methods in neurophysiology. Introduction to techniques for recording membrane potentials, studying synaptic transmission, and analyzing neural mechanisms involved in sensory information processing and regulation of behavior. Pre- or corequisite: 252. FALL. [1] Staff.

254. Neurobiology of Behavior. (Also listed as Biological Sciences 254) Nerve cell interactions in neuronal networks of the central nervous system of animals and their impact for regulating behavior. Sensory systems, sensory-motor integration, central processing of information, neuronal-hormonal interactions, and brain anatomy and organization in invertebrates and vertebrates. Prerequisite: 201 or 110b. SPRING. [3] Staff.

256. Advanced Human Parasitology. Recent advances in the immunology, biochemistry, and cell biology of human parasites. Prerequisite: 213. SPRING. [3] (Not currently offered)

262. Plant-Animal Interactions. (Also listed as Biological Sciences 257) Ecology and evolution of species interactions at individual, population, and community levels; coevolution; pollination biology; fruit and seed dispersal; mammal and insect herbivore and plant defense mechanisms; ant-plant and animal-fungus interactions. Prerequisite: 205. FALL. [3] Pellmyr.

270. Statistical Methods in Biology. (Also listed as Biological Sciences 270) An introduction to statistical methods used in the analysis of biological experiments, including the application of computer software packages. Emphasis on testing of hypotheses and experimental design. Topics include descriptive statistics, analysis of variance, regression, correlation, contingency analysis, and the testing of methods for sampling natural populations. FALL. [3] (Offered 2001/02)

274. Plant Evolutionary Biology. Comparative and experimental approaches to understanding variation and evolution in plants. Genotypic and phenotypic variation, adaptation, phylogeny, chromosomal evolution, mating systems and life histories, pollination and gene flow. Applications of current methods including isozyme, quantitative genetics, and DNA-based techniques. Prerequisite: 205 or Molecular Biology 210. [3] (Not currently offered)

280. Undergraduate Seminar. Directed readings and reports on basic topics in the biological literature. Normally open to senior majors; other undergraduates may enroll with consent of instructor. May be taken twice for credit for a total of 4 hours. [2] (Not currently offered)

290. Directed Studies. Independent reading or undergraduate research. Hours do not count for honors candidates or toward the major. May be taken for credit more than once, to a total of 4 hours. Consent of the director of honors and independent studies required. FALL, SPRING. [Variable credit: 1–2] Staff; Honegger, director.

291. Independent Reading. Reading in the biological literature focusing on a specific problem. Minimum requirement is Junior standing and a 3.0 grade point average in Biology courses. May be taken for credit more than once, to a total of 4 hours. (See Program of Con-

centration.) Consent of the director of honors and independent studies required. FALL, SPRING. [1] Staff; Honegger, director.

292. Undergraduate Research. Field or laboratory research on a specific problem, selected after consultation with a faculty member. Minimum requirement is Junior standing and a 3.0 grade point average in Biology courses. May be taken for credit more than once, to a total of 6 hours (See Program of Concentration.) Consent of the director of honors and independent studies required. FALL, SPRING. [2] Staff; Honegger, director.

319. Seminar in Zoology. [Variable credit: 1–2] (Not currently offered)

329. Seminar in Botany. FALL, SPRING. [Variable credit: 1–2] (Not currently offered)

330. Seminar in Biological Rhythms. FALL, SPRING. [Variable credit: 1–2] Page, Johnson.

338. Seminar in Ecology and Evolutionary Biology. FALL, SPRING. [Variable credit: 1–2] McCauley, staff.

345. Biology Seminar. [Variable credit: 1–2] (Not currently offered)

350. Special Topics. FALL. [Variable credit: 1–3] Pellmyr.

Molecular Biology

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DIRECTOR OF GRADUATE STUDIES Charles K. Singleton

PROFESSOR EMERITUS Oscar Touster

PROFESSORS Ellen Fanning, Sidney Fleischer, Wallace M. LeSturgeon, Gisela Mosig,

Charles K. Singleton, James V. Staros, Gerald J. Stubbs, Robley C. Williams Jr.

ASSOCIATE PROFESSORS Martin Egli, Todd R. Graham, Thomas N. Oeltmann,

James G. Patton, John H. Venable

RESEARCH ASSOCIATE PROFESSOR J. Oliver McIntyre

ASSISTANT PROFESSORS Bruce H. Appel, Andrzej M. Krezel, Lilianna Solnica-Krezel,

Lawrence J. Zwiebel

RESEARCH ASSISTANT PROFESSOR Vladimir N. Podust

SENIOR LECTURER Mark A. Woelfle

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Molecular biology is a rapidly advancing discipline in which the concepts and methods of chemistry, physics, and classical biology are utilized in an effort to understand how living systems function. Research by molecular

biologists is providing explanations of many fundamental biological processes, stimulating progress in such areas as genetic engineering, and permitting insight into the causes and cures of human disease. Educational and research activities in molecular biology are concentrated at Vanderbilt in a comprehensive department within the College of Arts and Science.

At the undergraduate level the Department of Molecular Biology offers individual courses, a major program, and a wide range of research opportunities. The major in molecular biology serves as specific preparation for careers in biology, biochemistry, and other sciences and is excellent preparation for the study of medicine. Majors may choose among the standard major, the professional major, and the professional major with Honors. Students planning to obtain an advanced degree in the biological sciences or to attend a research-oriented medical school should choose the professional major or the professional major with Honors.

Undergraduates are encouraged to participate in research. Many projects are available in areas including molecular genetics, biochemistry, cellular and developmental biology, and molecular structure, using an extensive array of modern equipment. A recurrent theme of research projects is investigation of the molecular mechanisms of biological processes, including evolutionary and developmental aspects of transcriptional and translational control of gene expression; assembly and structure of viruses, organelles, membranes, ribonucleosomes, and microtubules; and regulation of recombination, replication, and RNA processing.

Program of Concentration in Molecular Biology

The program of concentration in molecular biology provides three alternative tracks:

Program A. The Standard Major permits a broad study of molecular biology without special emphasis on the research aspects of the field. Students are required to complete 30 hours of course work in molecular biology. Courses must include 210, 211, and 220. No more than 3 hours of directed laboratory research (283), independent reading (282), and independent laboratory research (286) combined may be counted toward the Program A major, although additional hours may be taken as electives.

Program B. The Professional Major is designed for students interested in the research aspects of molecular biology. Students are required to complete 33 hours of course work in molecular biology. Courses must include 210, 211, 220, and 265, either 201 or 255, and either 261, 262, or 277.

Program C. The Professional Major with Honors is intended for the superior student with a strong research orientation who wants to undertake a research project of significance. Entrance into and satisfactory completion of this program requires that the student maintain a grade point average of not less than 3.000 in all courses counting toward the major and in all courses. Major requirements are identical to those of Program B except that at

least 10 hours must be in laboratory research (286 or 296), with at least 4 hours in each of 2 semesters. In addition, an honors thesis and an oral defense of the thesis research are required.

All molecular biology courses except 101 and 115 count toward the major (all tracks). Biological Sciences 110a–110b counts toward the major.

In all three tracks, students are required to take Chemistry 219a–219b and 220a–220b and one year of physics at the level of 117a–117b or 121a–121b. (It should be noted that many medical schools require 8 hours of physics.) In tracks B and C there is a further requirement of Mathematics 150a–150b (or higher). Since the physical sciences and mathematics constitute the basis of the molecular approach to biology, students are encouraged to undertake more advanced course work in these areas as time permits.

All students are encouraged to participate in directed laboratory research (Molecular Biology 283) or independent laboratory research (286) as part of the major program. It may be desirable to precede independent laboratory research with a semester of independent reading (282) of a research internship (280a–280b) under the prospective research supervisor.

Six hours of physical chemistry may be included automatically in the major program, and permission may occasionally be granted on request to count selected 200-level courses in biology, physics, or chemistry toward the major in molecular biology. Moreover, qualified students may be given permission to enroll in 300-level courses in molecular biology or related fields.

Students interested in majoring in molecular biology are advised to take Chemistry 102a–102b (with 104a–104b) or 103a–103b in the first year and Chemistry 220a–220b (with 219a–219b) in the second year. Biological Sciences 110a will ordinarily be taken in the spring semester of the first year and 110b in the fall semester of the second year. Students who have not completed these courses as early as expected, however, are urged to consult the director of undergraduate studies or individual course instructors in order to construct a sequence of courses that will allow them to complete the major.

Minor in Molecular Biology

The minor requires a minimum of 18 credit hours as follows:

Biological Sciences 110a & 110b: Introduction to Biological Sciences [6];
111a & 111b Biological Sciences Laboratory [2]

Molecular Biology 210: Principles of Genetics [3]

Molecular Biology 220: Biochemistry I [3]

Two other courses that count toward the major, at least one of which must be a three-hour course, excluding Molecular Biology 282, 283, and 286 [4–6]

In order to satisfy the above requirements, a student has to take four semesters of chemistry with laboratory, i.e., freshman chemistry and organic chemistry. The two other courses requirement is framed to allow a student to take a one-hour course, but it insures that a student will have at least one additional three-hour didactic course in Molecular Biology as well.

Licensure for Teaching

Candidates for teacher licensure in biology at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

101. Fundamentals of Biology. (Also listed as Biological Sciences 101 and Biology 101) An overview of biology: cell biology; genetics, including human genetics; recombinant DNA technology; evolution; behavior; plant physiology; and animal physiology. Three lectures and one laboratory period each week. Open only to candidates for teacher licensure. Not open to students who have completed a college biology course. FALL. [4] Staff.

115. Freshman Seminar. FALL. [3]

201. Introduction to Cell Biology. (Also listed as Biological Sciences 201 and Biology 201) Structure and function of cells, subcellular organelles, and macromolecules. Fundamentals of organelle function, membrane transport, energy production and utilization, cell motility, cell division, intracellular transport and mechanisms of signal transduction. Prerequisite: Biological Sciences 110a–110b. SPRING. [3] Graham, Zwiebel.

202. Cell Biology Laboratory. (Also listed as Biological Sciences 202 and Biology 202) One three-hour laboratory and discussion period per week. May only be taken concurrently with or following 201. SPRING. [1] Staff.

210. Principles of Genetics. (Also listed as Biological Sciences 210) Basic principles and mechanisms of inheritance discussed and related to other biological phenomena and problems. Prerequisite: Biological Sciences 110a–110b. SPRING. [3] Appel, Solnica-Krezel.

211. Genetics Laboratory. (Also listed as Biological Sciences 211) One three-hour laboratory and discussion period per week. May only be taken concurrently with or following 210. SPRING. [1] Woelfle.

220. Biochemistry I. (Also listed as Biological Sciences 220) Structure and mechanism of action of biological molecules, proteins, nucleic acids, lipids, polysaccharides. Enzymology. Carbohydrate metabolism. Prerequisite: 110a–110b and Chemistry 220a–220b. FALL, SPRING. [3] Stubbs, Krezel.

221. Biochemistry Laboratory. (Also listed as Biological Sciences 221) Biochemical techniques; illustrations and applications of biochemical principles. Prerequisite: Chemistry 219a–219b and 220a–220b and pre- or corequisite 220. [1] (Not currently offered)

228. Introduction to Immunology. (Also listed as Biological Sciences 226 and Biology 228) The molecular and cellular basis of immunity. Emphasis on molecular structure, the genetic origin of diversity in B-cell and T-cell receptors, antigen presentation, and the cellular interactions leading to the immune response. Tolerance, tumor and transplantation immunity, autoimmune and immunodeficiency diseases, and allergy. SPRING. [3] Carter.

235. Molecular Biology of Disease. Molecular mechanisms underlying disease states and drug function. Analysis of the biochemical and molecular elements of several diseases. Clinical, pathological, and therapeutic aspects. Arteriosclerosis, cancer, cystic fibrosis, and diabetes. Prerequisite: 210 or 220. [3] (Not currently offered)

240. Developmental Biology. (Also listed as Biological Sciences 240 and Biology 240) Genetic, molecular, and cellular mechanisms underlying development of eukaryotic organisms with emphasis on insects and vertebrate animals. Topics include regulation of gene expression during developmental processes, specification of embryonic polarity, genera-

tion and patterning of germ layers organogenesis, axonal specificity, evolution of chordate body plan. FALL. [3] Solnica-Krezel, Zwiebel.

247. Molecular Evolution. (Also listed as Biological Sciences 247 and Biology 247) The theory of evolution at the molecular level. The evolution of DNA and RNA sequences, proteins, and genome structures will be studied using models from population genetics and comparative approaches. Molecular clocks, the evolution of gene regulation and globin genes, molecular phylogeny, and human evolution. Prerequisite: 210 or 205. FALL. [3] Funk.

249. Viruses. (Also listed as Biological Sciences 249) Scientific principles from virology and their applications in medicine, public health, and agriculture, related economic and anthropological issues and changing scientific paradigms. Mechanisms and controls of nucleic acid replication, transcription, translation, virus-host interactions, and virion architecture, in the context of present knowledge and historical perspectives. Prerequisite: 210 or 220. FALL. [3] Mosig.

255. Cell Physiology. (Also listed as Biological Sciences 255) Molecular biology of cell function and organization with emphasis on higher animals. Emphasis on macromolecular basis of action of cells, organelles and membranes, energy interconversions, nerve conduction, cell regulation, motility, and multicellularity. Prerequisite: 220. SPRING. [3] Fleischer.

261. Introduction to Structural Molecular Biology. The ways in which light and other forms of electromagnetic radiation interact with biological molecules to reveal their structures. Topics include fluorescence, circular dichroism, x-ray crystallography, NMR and electron microscopy. Structures of proteins, nucleic acids and their assemblies as determined by these approaches. Prerequisite: 220. [3] (Not currently offered)

262. Biomolecular Interactions. (Also listed as Biological Sciences 262) Energetics and kinetics of interactions between proteins and nucleic acids and their ligands. Topics include cooperativity, allostery, rates of binding reactions. Students will gain direct experience in computer use, but no programming is required. Prerequisite: 220 and Physics 117a–117b. One lecture and two calculation sessions per week. FALL. [3] Williams.

265. Biochemistry II. (Also listed as Biological Sciences 265) Lipid, amino acid, and nucleotide metabolism. Biochemistry of the expression and transmission of genetic information. Molecular physiology. Prerequisite: 220. SPRING. [3] Fanning, Williams.

273. Molecular Mechanisms of Environmental Toxins. (Also listed as Biological Sciences 273) Molecular interactions of environmental toxins with specific subcellular components and biochemical basis of their toxicity. Environmental mutagens, heavy metals, synthetic estrogens and other analogs of natural substrates, oxidants, and the question of synergy. Prerequisite: 220 and either 210 or 265. FALL. [3] LeSturgeon.

275a–275b. Undergraduate Seminar in Molecular Biology. Discussions and papers based on readings in original research journals. Topics to be selected from the following areas: cell biology (275a), genetics (275b). Prerequisite: 210 and 220. (275b not currently offered.) [1–1] Fanning, Krezel.

277. Protein Design. (Also listed as Biological Sciences 274) Protein structural motifs and the underlying physical principles. Methods of protein structural analysis, experimental and theoretical, including the use of computer graphics, database searching and analysis, and structural prediction. The design and expression of mutant, chimeric, and de novo proteins. Prerequisite: 210 and 220. FALL. [3] Staros, Egli.

280a–280b. Research Internship. Internship credit for work in the laboratory of a member of the Molecular Biology staff. A term paper on the research of the laboratory will be required. Prerequisite: Biological Sciences 110a. Prerequisite or corequisite: Biological Sci-

ences 110b. [1 credit only per semester; course may be repeated to a total of 2 credits]. Stubbs, coordinator.

282. Independent Reading in Molecular Biology. Reading and discussion of research papers in a selected area of molecular biology with a member of the staff. The course is intended to result in a term paper characterized by creativeness in the integration and interpretation of the material perused, and it may serve as background for selecting the Molecular Biology 286 problem. A student should make arrangements with a staff member prior to the end of the previous semester, preferably by Phase I of registration. Prerequisite: consent of Molecular Biology 282 coordinator. FALL, SPRING. [Variable credit: 1–3; a maximum of 3 hours may be counted toward graduation] Staff; Patton, coordinator.

283. Directed Laboratory Research in Molecular Biology. Directed student research on a segment of a research project conceived by a member of the molecular biology staff; may serve as the path for designing a molecular biology 286 proposal. A student must make arrangements with a staff member prior to the end of the previous semester, preferably by Phase I of registration. Prerequisite: consent of Molecular Biology 283 coordinator, overall grade point average of *B*. FALL, SPRING. [Variable credit: 3–6; a maximum of 10 hours for 283 plus 286 may be counted toward graduation] Staff; Williams, coordinator.

286. Independent Laboratory Research in Molecular Biology. Original student research on a defined problem in molecular biology approved by and under the supervision of a member of the molecular biology staff. Some independence in the design and execution of the problem by the student is expected. A student must make arrangements with a staff member prior to the end of the previous semester, preferably by Phase I of registration. Prerequisite: consent of Molecular Biology 286 coordinator, overall grade point average of *B*. FALL, SPRING. [Variable credit: 3–10; a maximum of 10 hours of 283 plus 286 may be counted toward graduation] Staff; Stubbs, coordinator.

295. Independent Reading for Honors. Open only to molecular biology majors in honors program (Program C). FALL, SPRING. [Variable credit: 1–3] Staff; Stubbs, coordinator.

296. Honors Research. Open only to molecular biology majors in honors program (Program C). FALL, SPRING. [Variable credit: 1–10] Staff; Stubbs, coordinator.

320. Seminar in Molecular Biology. [1]

325. Dynamic Organization of Nuclear Function. [3]

326. The RNA World. [2]

327. Developmental Biology of Microorganisms. [2]

328. Microbial Genetics. [2]

340. Developmental Biology. [3]

344. Focal Topics in Molecular Biology. [3]

349. Graduate Seminar in Molecular Biophysics. [1]

361. Fundamentals of Molecular Biophysics. [3]

385. Advanced Reading in Molecular Biology. [1–3]

390. Special Topics and Advanced Techniques in Molecular Biology. [2–4]

Chemistry

CHAIR David M. Hercules

DIRECTOR OF UNDERGRADUATE STUDIES Timothy P. Hanusa

DIRECTOR OF GRADUATE STUDIES Charles M. Lukehart

PROFESSORS EMERITI Robert V. Dilts, Larry C. Hall, Melvin D. Joesten, Mark M. Jones,
Donald E. Pearson, Howard E. Smith, John R. Van Wazer, David J. Wilson

PROFESSORS Richard Armstrong, Richard M. Caprioli, Thomas M. Harris,

David M. Hercules, B. Andes Hess Jr., Charles M. Lukehart, Lawrence J. Marnett,

Prasad L. Polavarapu, Ned A. Porter, Lawrence J. Schaad, Joel Tellinghuisen

ADJOINT PROFESSORS Marwan C. Houalla, Lidia Smentek

ASSOCIATE PROFESSORS Timothy P. Hanusa, Piotr Kaszynski, Carmelo J. Rizzo,

Michael P. Stone, David L. Tuleen

RESEARCH ASSOCIATE PROFESSOR Constance M. Harris

ASSISTANT PROFESSORS David E. Cliffler, Tingyu Li, Sandra J. Rosenthal

ADJOINT ASSISTANT PROFESSORS Andrienne C. Friedli, Stephen B. Milne

I THE Department of Chemistry at Vanderbilt offers a wide range of courses from the introductory level to the doctoral level. Undergraduate courses are designed for students planning careers in chemistry, medicine, business, and other professions, and for students taking chemistry as part of the foundation for another discipline. Faculty members in the department serve as both scientists and teachers, bringing to the classroom the results and excitement of their research. Because of this dual emphasis, students are made aware of the latest developments in the field. Undergraduate majors are encouraged to participate in faculty research projects and often receive their own laboratory space for study and research. All courses are taught by full-time faculty members. Graduate students assist in grading and in the instruction of undergraduate laboratories.

Programs of Concentration in Chemistry

Three programs of concentration are available. Program A permits graduates to take positions of lesser responsibility as chemists and serves as a background for the teaching of chemistry in secondary schools or for the study of medicine, law, business, etc. Program B, for superior students, resembles Program C but requires independent study and research. Program C is intended for those who plan to do graduate work in chemistry or to make chemistry their profession. It meets the minimum standards of the American Chemical Society. Chemistry courses taken under the three programs are as follows:

A: BASIC	B: HONORS*	C: PROFESSIONAL
102a–b and 104a–b <i>or</i> 103a–b	4	102a–b and 104a–b <i>or</i> 103a–b
220a–b and 219a–b	8	0
210	4	8
		220a–b and 219a–b
		210
		4

230	3	230, 236	4	221 (or 204 and	
236	1	231, 237	5	282a–b)	3
Additional 200-level		203	3	230, 236	4
courses	7	292a–b–c	6	231, 237	5
		Graduate courses		203	3
		or 291a–b	2	211	4
				Advanced chemistry	6
Total hours 27		Total hours 32		Total hours 37	

* In order to be certified by the American Chemical Society, an Honors candidate must also complete Chemistry 211 and fulfill requirements in mathematics and physics. Graduate courses are those that may be taken for credit by a graduate student in chemistry.

Program A. Basic. In the first year, students in Program A should complete Chemistry 102a–102b and 104a–104b or 103a–103b, foreign language (recommended but not required), and that mathematics course specified as the requirement for physical chemistry; in the second year 220a–220b and 219a–219b; in the third year 210, 230, 236; and in the third and fourth years 7 additional hours of chemistry at the 200- or 300-level. Up to three hours of 282a–282b may be counted toward the 27 hours. Molecular Biology 220 (Biochemistry I) is acceptable as additional chemistry in Program A. Credit is given for Chemistry 102b/104b or 103b but not for 102a/104a or 103a.

Mathematics 150a–150b is the minimum mathematics requirement for Chemistry A majors.

Program B. Honors. Near the end of their sophomore year, students with a minimum grade point average of 3.000 in all courses and of 3.000 in chemistry may apply for election to the honors program. Before the junior year the student should have completed 210, 220a–220b and 219a–219b, and the physics and mathematics prerequisite to 230. In the junior year the student takes 230, 231, 236, 237, and 292a (spring). In the senior year, the student takes 203 and 292b–292c. The student must complete 11 hours in the honors program. Chemistry 292a–292b–292c counts as 6 of these hours; the 5 remaining hours are satisfied by readings under the student's research adviser during the junior year (291a–291b) or by 203 plus one graduate course (normally in the senior year). Honors candidates will be expected to take the Graduate Record Examination in Chemistry during the fall semester of their senior year. The student must present a thesis on the research done under 292a–292b–292c and pass an oral examination on it. Additional information may be found in the chapter on Special Programs in the College.

Program C. Professional. Although a foreign language is not required, students are encouraged to take German during their undergraduate career, because it is often encountered in graduate work in chemistry. A suggested pattern for students in Program C, preparing for a profession in chemistry, is as follows: First year: Chemistry 102a–102b and 104a–104b or 103a–103b and Mathematics 155a–155b (Mathematics 150a–150b and 170a–170b is a less highly recommended but satisfactory option). Second year: 210, 220a–220b and 219a–219b, Mathematics 175, and Physics 117a–117b or 121a–121b (one

of these physics sequences is required for the Program C major). Third year: 221 (or 282a–282b), 230, 231, 236, 237. Fourth year: 203, 211, and advanced chemistry. Students are encouraged to include Mathematics 218 or 247–248 in their programs. Mathematics 155a–155b and 175 or 150a–150b and 170a–170b are the minimum requirements for Program C majors.

“Advanced chemistry” may consist of: (a) 202, 203, 207, 223, 224, 232, 235, 238, 250, 282a–282b, or 300-level courses, or (b) appropriate courses in mathematics above 194, computer science above 200, or statistics above 218, or (c) 200-level physics courses that require calculus, or (d) Molecular Biology 220, or (e) Chemical Engineering 223 and 225, or (f) Geology 260.

Minor in Chemistry

The minor in chemistry requires 18 hours of course work, including 102b and 104b or 103b, General Chemistry (4 hours), and 14 hours selected from any of the 3- or 4-hour courses acceptable for the major in Chemistry.

Biochemistry

In addition to the biochemistry course cross-listed as chemistry, the following course in biochemistry is available to selected undergraduates majoring in chemistry who obtain permission from (a) the director of the undergraduate program, (b) the chair of the Department of Biochemistry, and (c) the Dean for Graduate Studies and Research: 331. The Role of Carbohydrate Structures in Normal and Diseased States [2]. A complete course description can be found in the *Graduate School Catalog*.

Licensure for Teaching

Candidates for teacher licensure in chemistry at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

Introductory Courses

Introductory chemistry is offered in three different year-long courses, each with its own laboratory. Only one of these year-long courses may be taken for credit. Successful completion of the first semester of any sequence is a prerequisite for the second semester of that sequence.

1. *Chemistry 101a–101b*. Intended for liberal arts students who are not planning to take any additional chemistry courses. It treats chemistry in a non-mathematical fashion, with some historical and philosophical features. Not for science and engineering students.

2. *Chemistry 102a–102b*. Designed for engineering, science, and pre-medical students. This course, which must be taken simultaneously with 104a–104b, serves as preparation for students intending to major in chemistry, biology, physics, or geology. It is a more rigorous, mathematical approach to chemistry and a prerequisite for organic and other chemistry

courses. It is not intended for liberal arts students taking a science course only to fulfill CPLE requirements.

3. *Chemistry 103a–103b.* Designed for students who have a strong background in chemistry: either two years of high school chemistry, a 4 or 5 Advanced Placement Test score, or 650 or higher on the College Board Achievement Test in chemistry. This course covers the same material as Chemistry 102b, but at a more advanced level. The enrollment in Chemistry 103b is limited to students who do well in Chemistry 102a or Chemistry 103a. Students who do poorly in Chemistry 103a will be required to transfer to Chemistry 102b.

Starred courses 102a–102b and 104a–104b or 103a–103b are prerequisite for all chemistry courses numbered above 150.

101a–101b. Introductory Chemistry. For students who are not planning to take additional chemistry. Does not serve as a prerequisite for advanced courses in chemistry without approval of the director of undergraduate studies. 101a is prerequisite to 101b. Three hours of lecture and one three-hour laboratory period each week. [4–4] Staff.

★**102a–102b. General Chemistry.** General principles of chemistry for science and engineering students. Composition and structure of matter, chemical reactions, bonding, solution chemistry, kinetics, thermodynamics, equilibrium, acids and bases, electrochemistry, coordination compounds. Ordinarily accompanied by 104a–104b. Corequisite: Mathematics 150a–150b or equivalent. Three lectures per week. [3–3] Staff.

★**103a–103b. Advanced General Chemistry.** An extensive and advanced treatment of the general principles of chemistry for students with a strong high school background. Enrollment limited each semester to students approved by the director of undergraduate studies. Three lectures and one three-hour laboratory period each week. [4–4] Schaad.

★**104a–104b. General Chemistry Laboratory.** Laboratory to accompany 102a–102b. Corequisite: 102a–102b. One three-hour laboratory per week. [1–1] Staff.

202. Introduction to Bioinorganic Chemistry. Functions of inorganic elements in living cells. The manner in which coordination can modify the properties of metallic ions in living systems. Non-metallic elements including selenium, iodine, chlorine, and phosphorus. Prerequisite: 220a–220b. [3] (Not currently offered)

203. Inorganic Chemistry. A survey of modern inorganic chemistry including coordination compounds and the compounds of the main-group elements. Representative reactions and current theories are treated. Prerequisite: organic and physical chemistry. FALL. [3] Hanusa.

204. Inorganic Preparations. Techniques used in inorganic synthesis are emphasized; one or two laboratories per week. Pre- or corequisite: 203. SPRING. [Variable credit; 1–2 each semester] (Not currently offered)

207. Introduction to Organometallic Chemistry. A general description of the preparation, reaction chemistry, molecular structure, bonding, and spectroscopic identification of organometallic compounds of the transition metals. Prerequisite: 203, 220a–220b. SPRING. [3] Lukehart.

210. Analytical Chemistry I. Fundamental quantitative analytical chemistry, with emphasis on principles and methods of separation, on equilibria, and on stoichiometry. No credit for graduate students in chemistry. Two lectures and two laboratory periods per week. SPRING. [4] Li.

211. Analytical Chemistry II. Chemical and physical principles of modern analytical chemistry with emphasis on instrumental techniques. No credit for graduate students in chemistry. Prerequisite: 210, 220a–220b, and 230. Two lectures and two laboratory periods per week. FALL. [4] Stone.

219a–219b. Organic Chemistry Laboratory. Laboratory to accompany 220a–220b. Corequisite: 220a–220b. One four-hour laboratory per week. [1–1] List.

220a–220b. Organic Chemistry. Fundamental types of organic compounds, their nomenclature, classification, preparations, reactions and general application. Prerequisite: 102a–102b, 103a–103b, 104a–104b. No credit for graduate students in chemistry. Ordinarily accompanied by 219a–219b. [3–3] Hess.

220c. Organic Chemistry Structure and Mechanism. Introduction to advanced topics in organic chemistry and applications to biologically related sciences. Stereochemistry and conformational analysis, mechanisms of organic, bioorganic and enzymatic reactions, linear free-energy relationships, reactive intermediates. FALL. [3] Porter.

221. Laboratory Techniques in Organic Chemistry. Advanced work in organic preparations, new synthetic techniques, and modern organic analytical methods, including infrared and nuclear magnetic resonance. Prerequisite: 220b. One lecture and two laboratory periods per week. SPRING. [3] Harris.

222. Physical Organic Chemistry. Structure and bonding in organic molecules. Reactive intermediates and organic reaction mechanisms. Prerequisite: 220b, 231. SPRING. [3] Porter.

223. Advanced Organic Reactions. A comprehensive study of the synthesis and behavior of organic compounds based on electronic theory. Prerequisite: 220a–220b and 221, 230, 231, 236, and 237, or special consent of instructor. Three lectures per week. SPRING. [3] Rizzo.

224. Bioorganic Chemistry. Essential metabolites including vitamins, steroids, peptides, and nucleotides. Consideration of phosphate esters and the synthesis of oligodeoxynucleotides. Prerequisite: 220a–220b. Three lectures per week. FALL. [3] Rizzo.

225. Spectroscopic Identification of Organic Compounds. Theoretical and practical aspects of spectroscopic methods, with an emphasis on NMR spectroscopy, for structural characterization of organic compounds. Prerequisite: 220b. SPRING. [3] Kaszynski.

226. Medicinal Chemistry. Drug design and development; drug interactions with receptors, enzymes, and DNA; selected therapeutic areas. Some organic synthesis. No credit for chemistry graduate students. Prerequisite: 220a–220b and 219a–219b. [3] (Not currently offered)

230. Physical Chemistry I. Chemical thermodynamics, chemical equilibrium, and chemical kinetics. Prerequisite: Math 150a–150b or Math 155a–155b. Credit is not given for both 200 and 230. No credit for graduate students in chemistry. FALL. [3] Tellinghuisen.

231. Physical Chemistry II. Electrochemistry, kinetic molecular theory, advanced chemical kinetics, and reaction mechanisms. Prerequisite: 230, Physics 117a–117b, and Math 175 or 170a–170b. No credit for graduate students in chemistry. SPRING. [3] Tellinghuisen.

232. Quantum Chemistry and Spectroscopy. Principles of quantum chemistry applied to molecular structure, bonding, and spectroscopy. Prerequisite: 230, Physics 117a–117b, and Math 175 or 170b. FALL. [3] Rosenthal.

235. Surface and Polymer Chemistry. Spectroscopic methods for studying surfaces, with emphasis on polymer systems. Prerequisite: 230. [3] (Not currently offered)

236. Physical Chemistry I Laboratory. One three-hour laboratory per week. Experiments in chemical thermodynamics, chemical equilibrium, and chemical kinetics. Normally taken concurrently with 230. No credit for graduate students in chemistry. FALL. [1] Tellinghuisen.

237. Experimental Spectroscopy. Experiments in ultraviolet, visible, infrared, Raman, and magnetic resonance spectroscopy, with application to lasers, photochemistry, and kinetics. No credit for graduate students in chemistry. One three-hour laboratory and one lecture per week. Prerequisite: 230 and 236. SPRING. [2] Tellinghuisen.

238. Data Analysis. Probability and experimental error in physical science. Statistical methods, with emphasis on the method of least squares. Applications in physical and analytical chemistry. Prerequisite: 230. [1] Tellinghuisen. (Not currently offered)

250. Chemical Literature. Assigned readings and problems in the nature and use of the chemical literature. Prerequisite: one year of organic chemistry. SPRING. [1] Staff.

282a–282b. Undergraduate Research. Open to students who have completed at least 8 hours of chemistry, upon request to the director of undergraduate studies, with consent of a faculty member who will sponsor the research. Prerequisite: a minimum grade point average in chemistry of 2.7. May be repeated any number of times depending on variation of topic. FALL, SPRING. [Variable credit: 1–3 each semester] Staff.

291a–291b. Readings for Honors. Open only to students in Honors program. 291a: general reading supervised by research adviser. 291b: continuation, with emphasis on research planned. FALL, SPRING. [2–2] Staff.

292a–292b–292c. Honors Research. Open only to students in Honors program. Original research supervised by research adviser, to be reported in thesis form with oral examination thereon. FALL, SPRING. [2–2–2] Staff.

301a–301b. Chemistry Seminar. [1–1]

304. Special Topics in Inorganic Chemistry. [3]

306. Physical Methods in Inorganic Chemistry. [3]

311. Advanced Analytical Chemistry. [3]

312. Electrochemistry: Theory and Analysis. [3]

314a. Special Topics in Analytical Chemistry. [3]

315. Separation Methods: A Practical Approach. [3]

324. Special Topics in Organic Chemistry. [3]

326. Readings in Organic Chemistry. [1]

330a–330b. Quantum Chemistry I, II. [3–3]

331. Statistical Thermodynamics. [3]

332. Special Topics in Chemical Physics. [3]

334a. Special Topics in Physical Chemistry. [3]

335. Thermodynamics and Kinetics of Inorganic and Organic Materials. [3]

336. Biochemical Toxicology and Carcinogenesis. [3]

340. Applications of Group Theory. [3]

350. Materials Chemistry. [3]

360. Practicum in Chemistry Instruction. [0]

380. Introduction to Research. [3]

385. Advanced Reading in Chemistry. [3]

Chinese

SENIOR LECTURER Xianmin Liu

1 COURSES in Chinese may be taken on an elective basis. Students interested in an interdisciplinary major in East Asian Studies may consult the director of the program about the role of Chinese in such a major.

201–202. Intensive Modern Chinese. An intensive introduction into the structure of modern Mandarin and aural comprehension of the spoken language. [5–5] Liu.

214–216. Second-Year Chinese. Emphasis on reading. Also included are syntax, writing, translation, and conversation. Prerequisite: 201–202. [5–5] Liu.

241–242. Third-Year Chinese. Readings in contemporary Chinese. Prerequisite: Chinese 214–216. [3–3] Liu.

251–252. Fourth-Year Chinese. Readings in advanced Chinese historical, cultural, and literary texts. Prerequisite: Chinese 241–242. [3–3] Liu.

289a–289b. Independent Study. A reading course, the content of which varies according to the needs of the individual student. Primarily designed to cover pertinent material not otherwise available to the student in the regular curriculum. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed a total of 12 over a four-semester period] Liu.

Classical Studies

CHAIR Susan Ford Wiltshire

DIRECTOR OF UNDERGRADUATE STUDIES Thomas A. J. McGinn

DIRECTOR OF GRADUATE STUDIES F. Carter Phillips

PROFESSORS Robert Drews, Jack M. Sasson, Henry A. Teloh, Susan Ford Wiltshire

ASSOCIATE PROFESSORS Thomas A. J. McGinn, F. Carter Phillips, Barbara Tsakirgis

ASSISTANT PROFESSOR Kathy L. Gaca

MELLON ASSISTANT PROFESSOR Christopher Brunelle

SENIOR LECTURER Daniel P. Solomon

1 CLASSICAL studies have always been the heart of a liberal education and offer the student unmatched perspectives within which to understand our own time. They show how our oldest beliefs and institutions came into being, and bring to life systems of values both different from and similar to our own.

Courses are offered in the history, religion, art, philosophy, social problems, literature, and mythology of the ancient world. The curriculum covers 3,500 years of human experience in the ancient Near East, Greece, and Roman Europe, from the beginnings of civilization to the Christianization of Europe and the dawn of the Middle Ages.

Two major programs are offered. Students majoring in classics may take much of their work in courses on antiquity that require no knowledge of Greek or Latin. Students majoring in classical languages take their course work in Greek or Latin. Majors are encouraged to spend a semester at the Intercollegiate Center for Classical Studies in Rome. A summer program at the American School of Classical Studies in Athens is also available.

Eta Sigma Phi, the national honorary society for classics, functions as the department's extracurricular organization.

Program of Concentration in Classical Languages

Students take 32 hours in Greek and Latin. Those who want to concentrate in one language must also complete at least two semesters' work in the other, although credit toward the 32-hour requirement will be given for only one of the elementary sequences (*either* Greek 201–202 *or* Latin 100 *or* 101–102).

Program of Concentration in Classics

Students complete at least 30 hours in classics, Greek, or Latin courses, at least 6 hours of which must be in Greek courses numbered above 204 or in Latin courses numbered above 104. Only one of the elementary language sequences (*either* Greek 201–202 *or* Latin 100 *or* 101–102) may be applied toward the 30-hour requirement. Religious Studies 209 may be counted toward the major.

Honors Program in Classics and in Classical Languages

Admission requirements are: completion of junior year and completion of at least six hours of work in advanced Greek or Latin courses (above Greek 204 or Latin 104), and an overall GPA of 3.00, with 3.25 in courses within the department (including hours earned at the I.C.C.S. in Rome).

In order to graduate with departmental honors, a student must (in addition to maintaining the stated GPA through the senior year) satisfy the following requirements:

1. Complete twelve hours of work beyond the intermediate level in Latin and/or Greek for Honors in Classics, and eighteen hours for Honors in Classical Languages.
2. Write a senior thesis, and defend it before the department, for three hours credit.
3. For Honors in Classical Languages, demonstrate competence in the

history of either Greek or Latin literature, by satisfactory performance on a written and oral examination. For Honors in Classics, demonstrate competence in either Greek history and archaeology or Roman history and archaeology. This competence can be demonstrated in several ways: *B+* work at the I.C.C.S. in Rome, *B+* work in two of the department's pertinent Classics courses (204, 205 and either 208 or 209; 206 and either 212 or 213), or satisfactory performance on a written and oral examination.

Minor in Classical Studies

Students who want a minor in classical studies may tailor their program according to their needs; but they are required to study Greek or Latin through the intermediate level and to complete an additional 15 hours.

Requirements for the minor are as follows:

1. Either Latin 104 or Greek 204 or equivalent*
2. Five courses from among the following, of which at least three must be at the 200 level:
 - a. *Language and literature*:
Latin 201, 202, 206, 215, 220, 260, 268
Greek 212
 - b. *Civilization*: Classics 130, 146, 222
 - c. *History*: Classics 208, 209, 212, 213
 - d. *Art and Archaeology*: Classics 203, 204, 205, 206, 217
 - e. *Mythology, Law, and Philosophy*: Classics 150, 160, 210

*Equivalence is demonstrated by taking a higher-level language course.

Licensure for Teaching

Candidates for teacher licensure in Latin at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

Greek

201. Beginning Greek I. (Formerly 101) The elements of classical Greek. Reading of simplified texts from authors of the fifth and fourth centuries B.C. FALL. [4] Philips.

202. Beginning Greek II. (Formerly 102) Continuation of 201. Completion of the elements of classical Greek through readings from classical authors. Introduction to Homeric and Hellenistic Greek. Prerequisite: 201 or departmental placement. SPRING. [4] Philips.

203. Intermediate Greek I: Classical and Koiné Greek. Review of Greek grammar, and reading from classical and biblical texts. Prerequisite: 202. FALL. [3] Philips.

204. Intermediate Greek II: Homer's *Iliad*. Selected reading and interpretation; history and literary characteristics of the Homeric epic; practice in reading of meter. Prerequisite: 203. SPRING. [3] Philips.

212. The Greek Historians. Selections from the major Greek historians, especially Herodotus and Thucydides, and study of their philosophy of history; investigation of the development of historical prose writing. Prerequisite: 204. FALL. [3] Drews.

215. The Greek Tragedians. Selections from the plays of Aeschylus, Sophocles, and Euripides. Survey of the development of tragedy. Prerequisite: 204. [3] Philips, Wiltshire. (Offered 2001/02)

216. Readings in Plato and Aristotle. Selected readings from the dialogues of Plato and from the ethical writings of Aristotle. Corollary readings and discussions of the pre-Socratic philosophers and the post-Aristotelian schools. Prerequisite: 204. [3] Gaca. (Offered 2001/02)

240. The Gospels in Greek. Matthew and selections from the other Gospels. Prerequisite: 203 or departmental placement. [3] (Not currently offered)

289. Independent Study. Designed for majors wanting to familiarize themselves with works and authors not covered in the regular curriculum. Prerequisite: 6 hours above 204. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed a total of 6]

313. Seminar in Classical Greek Prose. SPRING. [3] Gaca.

314. Seminar in Classical Greek Poetry. [3] (Offered 2001/02)

320. Seminar in Early Greek Poetry. [3] Philips. (Offered 2001/02)

Latin

100. Intensive Elementary Latin. The equivalent of Latin 101 and 102. This course presents the elements of the Latin language at an accelerated pace. Designed for students who have completed one or two years of Latin in high school but are not prepared to enter Latin 102. FALL. [5] Solomon.

101. Beginning Latin I. The direct *Lingua Latina* method of instruction, designed to enable the student to understand elementary Latin, whether written or oral. Some practice in speaking and writing in Latin. FALL. [4] Solomon.

102. Beginning Latin II. Continuation of I, and transition to literary Latin. Emphasis on the comprehension of texts. Prerequisite: 101 or departmental placement. SPRING. [4] Solomon.

103. Intermediate Latin I. Review of Latin grammar and selected reading from major Latin authors. Prerequisite: 100 or 102 or departmental placement. FALL. [3] Brunelle.

104. Intermediate Latin II. Selected reading from the major Latin poets. Prerequisite: 103 or departmental placement. SPRING. [3] Wiltshire.

201. Catullus and Horace. Reading and interpretation of the *Carmina* of Catullus and the *Odes* of Horace. Prerequisite: 104 or departmental placement. SPRING. [3] Solomon.

202. Ovid. Reading and interpretation of selections from the *Metamorphoses* or other works of Ovid. Prerequisite: 104 or departmental placement. [3] (Offered 2001/02)

205. Latin Letters. The literary letters of Seneca and Pliny, with a brief introduction to the personal correspondence of Cicero and the letters discovered at Vindolanda. Prerequisite: 104 or departmental placement. [3] (Offered 2002/03)

206. Cicero and the Humanistic Tradition. Study of Cicero's career and thought, and of his contribution to the development of the concept of *humanitas*. Readings from his letters, speeches, and philosophical works. Prerequisite: 104 or departmental placement. [3] (Offered 2001/02)

212. Roman Comedy. Reading of selected comedies of Plautus and Terence: study of the form of Roman comedy and its relation to the Greek New Comedy. Prerequisite: 104 or departmental placement. FALL. [3] McGinn.

215. The Roman Historians. Selections from Sallust, Livy, and Tacitus, with attention to their objectives and methods; analysis of Roman historiography and its relation to Greek and early Christian historiography. Prerequisite: 104 or departmental placement. [3] (Offered 2001/02)

220. Vergil: *The Aeneid*. An intensive study of the entire poem, in the context of the epic tradition. Prerequisite: 104 or departmental placement. [3] Wiltshire. (Offered 2001/02)

260. Early Christian Writers. Selections from the writings of Latin Christians, from the account of Perpetua's martyrdom to the *Confessions* of Augustine. Prerequisite: 3 hours above 104. [3] (Offered 2001/02)

268. Lucretius: *De Rerum Natura*. Lucretius' poem studied both in the tradition of Epicurean philosophy and as a landmark in the development of the Latin didactic epic; background material in the fragments of Epicurus and some treatment of the Epicurean movement in Italy and especially in Rome. Prerequisite: 3 hours above 104. [3] Wiltshire. (Offered 2001/02)

289. Independent Study. Designed for majors wanting to familiarize themselves with works or authors not covered in the regular curriculum. Prerequisite: 6 hours above 104. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed a total of 6]

313. Seminar in Classical Latin Prose. FALL. [3] McGinn.

314. Seminar in Classical Latin Poetry. SPRING. [3] Brunelle.

Classics

Courses below the 300 level require no knowledge of either Greek or Latin.

115, 115W. Freshman Seminar. [3]

130. Greek Civilization. A survey of the history and achievements of Greece from its Mycenaean origins to the Roman domination. Topics include literature, art, athletics, Periclean Athens, the conquest of Alexander, and the Hellenistic age. FALL, SPRING. [3] Philips, Solomon.

146. Roman Civilization. Ancient Roman civilization from mythical foundations to the fall of the empire. A historical survey of topics including art and architecture, city life, agriculture, religion, law, slavery, public entertainment, and literature. FALL, SPRING. [3] McGinn, Solomon.

150. The Greek Myths. A study of the nature of the Greek myths, with consideration of the related Near Eastern myths and the early history of myths in Greece. Both the divine and the heroic myths, with some attention to the development of these myths in Italy and to their influence upon art and literature. FALL, SPRING. [3] Brunelle.

160. Roman Law. Emphasis on the interaction of a system of law with social needs and expectations, on thinking and arguing about law, and on evaluation of law's social inadequacy. [3] McGinn. (Offered 2002/03)

171. Ancient Greek Medicine and its Legacy. Ancient Greek medical knowledge, practice, and cultural values; the Hippocratic tradition and its influence. Linguistic techniques used in the study of scientific terms. The Classical heritage of modern medicine; the language and values associated with healing. SPRING. [3] Gaca, Philips.

203. Aegean Art and Archaeology of the Bronze Age. (Also listed as Fine Arts 203) The art and archaeology of the major cultures around the Aegean Sea between 3000 and 1000 B.C.: Minoan, Helladic or Mycenaean of the Greek mainland, Cycladic and those of Anatolia. No credit for students who have completed 223. FALL. [3] Tsakiris.

204. Archaic and Classical Greek Art and Architecture, 1000 to 400 B.C. (Also listed as Fine Arts 204) Sculpture, vase painting, architecture, and the minor arts from about 1000 B.C. to the late fifth century B.C. Formal and stylistic developments in relation to changing cultural background. No credit for students who have completed 227. FALL. [3] Tsakiris.

205. Late Classical Greek and Hellenistic Art and Architecture. (Also listed as Fine Arts 205) Sculpture, vase painting, architecture, and the minor arts from after the Parthenon to the Roman Empire. A focus on those media (wall painting and mosaic) which develop significantly in this period. [3] Tsakiris. (Offered 2001/02)

206. Roman Art and Architecture. (Also listed as Fine Arts 206) Sculpture, architecture, and painting from the tenth century B.C. to the early fourth century A.D. Daily life of the Romans as seen in the towns of Pompeii and Herculaneum. No credit for students who have completed 228. [3] Tsakiris. (Offered 2001/02)

207. History of the Ancient Near East. (Also listed as History 207) From the neolithic period to the conquests of Alexander the Great, in the geographical area from Persia to Troy and Egypt. Special attention to the history of Israel. SPRING. [3] Drews.

208. History of Greece to Alexander the Great. (Formerly 208a; also listed as History 208) The Greek world from the beginning of the Mycenaean Age (1650 BC) to the end of the Classical period. Special attention to the relationship between political history and the development of Hellenism. FALL. [3] Drews.

209. Greece and the Near East from Alexander to Theodosius. (Formerly 208b; also listed as History 209) From Alexander's conquest of the Persian Empire to the ascendancy of Christianity in the late fourth century. Emphasis on social, cultural and religious transformations, within the framework of political history. SPRING. [3] Drews.

210. Ancient Philosophy. (Also listed as Philosophy 210) An examination of the major Greek and Roman philosophers with emphasis on the works of Plato and Aristotle. FALL. [3] Teloh (Philosophy).

211. The Greek City. The example of ancient Athens. The stoa, the theater, the house, and fortifications. Institutions such as the courts, the public assembly, and the family. Literary, historical, archaeological, and philosophical sources. [3] Tsakiris. (Offered 2001/02)

212. History of the Roman Republic. (Also listed as History 210) The growth and evolution of the Roman world, from the foundation of the city in the seventh century B.C. to the reign

of Caesar Augustus. The Romans' unification of Italy, conquest of the Mediterranean and western Europe, adoption of Hellenism, and overthrow of the Republic. No credit for students who have had the former 209 [History of Rome]. FALL. [3] Drews.

213. History of the Roman Empire. (Also listed as History 211) The Roman world from Augustus to the collapse of the western empire in the fifth century. Political, military, social, and religious history. Special attention given to problems arising from use of the primary sources as well as to controversies in modern scholarship. No credit for students who have had the former 209 [History of Rome]. SPRING. [3] McGinn.

217. Art and Architecture of Egypt and the Ancient Near East. (Also listed as Fine Arts 217) A survey of the art and architecture of Egypt from the fourth millennium B.C. through the Old, Middle, and New Kingdoms, and a survey of the art and architecture of the major cultures of the ancient Near East from the fourth millennium to the late sixth century B.C., including the Sumerians, Assyrians, Hittites, and Babylonians. Emphasis on sculpture, wall painting, architecture, and the minor arts. [3] Tsakirgis. (Offered 2001/02)

218. Hellenistic and Late Ancient Philosophy. (Also listed as Philosophy 218) Philosophical ideas of Stoics, Cynics, Epicureans, skeptics, Peripatetics, Neoplatonists, and early monotheist thinkers such as Philo, Origen, and Philoponus. [3] Goodman. (Not currently offered)

220. Women, Sexuality, and the Family in Ancient Greece and Rome. (Also listed as Women's Studies 220) The status and role of women, law and the regulation of the private sphere, sexuality and gender roles, demography and family structure, marriage, children, religion, domestic architecture and the household economy, ancient critiques of the family, and the impact of Christianity. [3] McGinn. (Not currently offered)

222. Classical Tradition in America. (Also listed as American and Southern Studies 222) Influences of classical Greece and Rome on the literature, politics, architecture, and values of the United States from the colonial period to the present. SPRING. [3] Wiltshire.

236. Culture of the Ancient Near East. A survey of highly sophisticated Near East cultures of the last three millennia before the common era (BC). Discussion of political histories, and the social, religious, and intellectual heritage of Mesopotamia, Egypt, and Anatolia through excavated artifacts and written documents. FALL. [3] Sasson.

289. Independent Study. Completion of a substantial research paper in either classics or the classical tradition under the direction of a faculty sponsor. Consent of both the faculty sponsor and the director of undergraduate studies is required. Open only to students who have completed either Greek 204 or Latin 104. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed a total of 6]

299. Senior Honors Thesis. Open only to seniors in the departmental honors program. FALL, SPRING. [3]

305. Seminar in Classical Art and Architecture. FALL. [3] Tsakirgis.

398. Independent Study. [Variable credit: 1–3]

Communication Studies and Theatre

CHAIR Kassian A. Kovalcheck Jr.

PROFESSORS EMERITI Robert A. Baldwin, Randall M. Fisher, Cecil D. Jones Jr.,
Joseph E. Wright

ASSOCIATE PROFESSORS Jon W. Hallquist, Terryll W. Hallquist, Kassian A. Kovalcheck Jr.,
John M. Sloop

ASSISTANT PROFESSORS Anne T. Demo, Phillip Franck, Charles E. Morris

SENIOR LECTURERS John H. English, Carole Freeman Kenner, M. L. Sandoz,
Jeffrey Ullom

LECTURERS William M. Akers, Mollie B. Condra, Elizabeth Pollard

I THE Department of Communication Studies and Theatre offers a major in communication studies and a major in theatre. The communication studies major includes courses in such areas as rhetoric, argumentation and debate, communication theory, and the history and criticism of public address.

The Vanderbilt University Varsity Debate Team competes at national and regional levels. A full program of intercollegiate debate is available for students who choose to participate in forensics.

The theatre program includes courses in dramatic literature, theatre history and criticism, and the practice of theatre art—including acting, directing, and theatre design and technology.

Vanderbilt University Theatre presents four major productions and several one-act plays each year. All Vanderbilt students have the opportunity to audition for major roles and participate in technical assignments.

Minor programs are also available in both communication studies and theatre.

Program of Concentration in Communication

Communication Studies explores purposive human communication. The Department of Communication Studies is particularly devoted to an understanding of public discourse in the broadest sense, with an emphasis on the role of persuasion in civil society. To that end the subjects of study range from political discourse to commercial advertisement, from the history of rhetoric to the impact of mass media, from criticism of American public oratory to issues of freedom of speech. The department offers courses involving practice, criticism, and theoretical analysis. Education in these areas has traditionally produced citizen advocates who enter public life in business, law, journalism, and communication.

A major in Communication Studies requires 36 hours of course work. No more than 9 hours of 100-level courses may count toward the major. Students are permitted to use communication-related courses in other departments as part of the major. The requirements and options for the major are as follows.

1. Communication Studies 100, Fundamentals of Public Speaking (required)
2. At least one of the following courses in performance:
 - Communication Studies 200 Argumentation and Debate
 - Communication Studies 201 Persuasion
 - Communication Studies 202 Small Group Communication
3. At least three of the following courses in criticism and theory:
 - Communication Studies 220 Rhetoric of the American Experience 1640 to 1865**
 - Communication Studies 221 Rhetoric of the American Experience, 1865 to present**
 - Communication Studies 222 Rhetorical Criticism***
 - Communication Studies 230 Communication Theory
 - Communication Studies 241 Rhetoric of Mass Media
4. At least three of the following courses in applications and analysis:
 - Communication Studies 101 Interpersonal Communication
 - Communication Studies 210 Rhetoric and Civic Life***
 - Communication Studies 223 Values in Modern Communication
 - Communication Studies 224 Rhetoric of Social Movements
 - Communication Studies 225 History and Criticism of British Public Address
 - Communication Studies 235 Gender and Communication
 - Communication Studies 240 Freedom of Speech
 - Communication Studies 242 Communication, Culture, and Consciousness
 - Communication Studies 237 Communication of Science, Engineering, and Technology
 - Communication Studies 254 Methods of Rhetorical Analysis
 - Communication Studies 257 Contemporary Rhetorical Theory
 - Communication Studies 289 Independent Study in Communication; Communication Studies 294, Special Topics in Communication; Communication Studies 280a,b, and c, Internship; and Communication Studies 290. Directed Readings may also be available if you have met the requirements and have approval for any of these courses.

The remainder of the 36 hours may be selected from the courses listed above or from the following:

- BA 248 Human Resources in Work Organizations
- BA 247 Human Behavior in Organizations
- BA 250 Principles of Marketing
- English 120 Intermediate Composition
- English 200 Advanced Composition
- English 201 Non-Fiction Writing
- Linguistics 200 Introduction to Language
- Linguistics 202 Sociolinguistics
- Philosophy 102 General Logic
- Philosophy 202 Formal Logic
- Philosophy 246 Philosophy of Language
- Psychology 222 Learning and Memory
- Psychology 225 Thinking and Cognition
- Psychology 231 Social Psychology
- Psychology 242 Psychology of Language
- Psychology 250 Control of Human Behavior

Psychology 266 Interpersonal and Intergroup Relations
Political Science 241 Political Opinion and Behavior
Political Science 242 Political Communication
Sociology 248 Popular Culture Dynamics
Sociology 249 American Social Movements

*** Communication Studies 220 and 221 also count for credit on the American Studies portion of the CPLE History and Culture component.*

*** Communication Studies 210 and Communication Studies 222 also count for credit on the Humanities requirement for the CPLE.*

Minor in Communication Studies

A minor in communication studies requires completion of 15 hours from the following requirements and options in communication studies courses:

Required: 222 and 230.

Any two of the following: 220, 221, 223, 224, 225, 235, 240, 241, 242.

One of the following: 200, 201.

Program of Concentration in Theatre

Students majoring in theatre are required to complete a minimum of 30 hours in courses concerned exclusively with dramatic literature and the theatre; these 30 hours may also include Fine Arts 272a–272b. Required courses are 100 or 115W and 232; two courses chosen from 212, 213, 214; three courses chosen from 201, 202, 203, and 204.

Honors in Theatre

The honors program in Theatre is designed to afford superior students the opportunity to pursue more intensive work within their major field.

Admission requirements are: 1) completion of junior year; 2) completion of at least 21 hours of the theatre major; 3) 3.0 minimum cumulative GPA and a 3.3 minimum GPA in courses counting toward the major.

Candidates who successfully complete the following requirements may graduate with Honors or High Honors: 1) maintain the aforementioned GPA throughout the senior year; 2) complete all requirements of the theatre major; 3) complete 6 hours of independent research 299a–299b (Honors Research and Thesis) normally taken during the senior year; 4) write an honors thesis to be completed by the spring of the senior year; 5) successfully complete an honors oral examination on the topic of the thesis.

Minor in Theatre

A minor in theatre requires 15 hours of courses in the department, all of which are involved in one of three major areas of work offered to majors. In addition, Theatre 100 or 115W is required in each option, plus five courses from one of the following lists:

Dramatic Literature/ Theatre History: 201, 202, 203, 204, 232, Fine Arts 272a–272b.

Acting/ Directing: 170, 219, 220, 223, 230, 232, 3 hours of 221 credit.

Design/ Technology: 170, 212, 213, 214, 232, 3 hours of 211 credit.

Communication Studies

100. Fundamentals of Public Speaking. Theory and practice in speaking before an audience. Problems of preparation, content, organization, language, and delivery are treated. FALL, SPRING. [3] Staff.

101. Interpersonal Communication. A study of both the theory and application of verbal and nonverbal communication as they occur in relatively unstructured person-to-person and small group settings. FALL, SPRING. [3] Staff.

115W. Freshman Seminar. [3]

200. Argumentation and Debate. A course in the practice of debate examining argumentation theory. Emphasis on forms of reasoning and use of evidence in debate. Prerequisite: 100. FALL, SPRING. [3] Sandoz.

201. Persuasion. The theory and practice of persuasion with particular emphasis on speech composition, the use of language and its relationship to oral style, structure, and the relationship of structure to the process of speech preparation. Prerequisite: 100. FALL, SPRING. [3] Kovalcheck and Staff.

202. Small Group Communication. An introduction to the theory and practice of purposeful leadership and participation in group, committee, conference, and public discussion. Not available on a P/F basis. SPRING. [3] Condra.

210. Rhetoric and Civic Life. Public discourse and the duties and prerogatives of citizenship. Theory, models, and criticism of rhetoric and oratory in their deliberative, forensic, and epideictic settings. FALL, SPRING. [3] Staff.

220. Rhetoric of the American Experience: 1640–1865. (Also listed as American and Southern Studies 220) A critical and historical examination of the methods and effects of public debate and other attempts to influence the attitudes, affective response, and behavior of the American people. Attention to the rhetorical features of selected issues and speakers from colonial times through the Civil War. FALL. [3] Morris.

221. Rhetoric of the American Experience: 1865 to the Present. (Also listed as American and Southern Studies 221) A critical and historical examination of the methods and effects of public debate and other attempts to influence the attitudes, affective response, and behavior of the American people. Attention to the rhetorical features of selected issues and speakers from 1865 to the present. SPRING. [3] Morris.

222. Rhetorical Criticism. An investigation of standards for criticizing persuasive communication. Theories of classical and modern rhetoricians will be examined with special attention to Aristotle, Quintilian, Whately, and Burke. Uses specific movements, speakers, and speeches to illustrate methods of criticism. SPRING. [3] Kovalcheck.

223. Values in Modern Communication. An examination of values, explicit and implicit, in communication situations in modern American society. The course begins with the discovery and analysis of values and applies this process to technological innovation and rhetorical choice, interpersonal communication, advertising and consumerism, and mass-media persuasion. FALL. [3] Kovalcheck.

224. Rhetoric of Social Movements. (Also listed as American and Southern Studies 224) The role of communication in the creation, development, and function of social movements. The analysis of specific rhetorical acts. The study of the arguments, patterns of persuasion, and communication strategies of selected social movements. FALL. [3] Demo.

225. History and Criticism of British Public Address. History and criticism of selected speeches, pamphlets, and rhetorical campaigns in British political, legal, and social controversies. Rhetorical features of selected issues and speakers from Ethelbert to the present. [3] Staff. (Not currently offered)

230. Theory of Communication. A study of the basis for communicative effectiveness and failure. Emphasis on findings of contemporary multidisciplinary research within a framework of historical contributions to the theory of communication. SPRING. [3] Condra.

235. Gender and Communication. Theories of gendered communication in relation, interpersonal, small-group, and mass-mediated contexts. Examination of the social construction of gender through communication. [3] Staff. (Not currently offered)

237. The Communication of Science, Engineering, and Technology. Communicating technical research to the nontechnical public. The effects of public influence on research funding in America. Study of written and oral communication and the importance of creating an informed audience for technical innovation. FALL. [3] Chappell.

240. The Freedom of Speech. Rights and responsibilities of free expression. Theories of free speech; history of censorship; problems of defamation, obscenity, free press versus fair trial, nonverbal communication, advocacy of illegal acts and religious speech. SPRING. [3] Staff.

241. Rhetoric of Mass Media. (Also listed as American and Southern Studies 220) A study of the nature, effects, reasons for the effects, ethics, regulation, and criticism of contemporary mass media communication. Political causes, news reporting, commercial advertising, and similar sources of rhetoric are included. FALL. [3] Sloop.

242. Communication, Culture, and Consciousness. The relationship between the primary means of communication in a culture and its influence on knowledge and subjectivity. Orality, literacy, print and electronic communication, with a focus on postmodern aesthetics. SPRING. [3] Sloop.

254. Methods of Rhetorical Analysis. Application of methods of rhetorical analysis to the practice of criticism. Critical perspectives to be explored include those of Burke, Leff, Lucaites, Fisher, Osborn Griffin, Campbell, and Jamieson. SPRING. [3] Sloop.

257. Contemporary Rhetorical Theory. Exploration of contemporary themes in the investigation of rhetoric. Examination of the number of ways in which "rhetoric" can be represented in contemporary theory and the implications of theory. Theoretical models will include both modern and post-structural perspectives. FALL [3] Sloop.

280a–b–c. Internship. Under faculty supervision, interdisciplinary majors in communication gain experience with communication related organizations, agencies, or corporations. A thorough report and research paper are submitted at the end of the semester. A 2.75 grade point average, at least 6 hours of communication studies from 210, 220, 221, 222, 230, and prior departmental approval of the student's plan are required. Communication Studies 280a. Internship Training. May be taken on a Pass/Fail basis only and must be taken concurrently with 280b. These hours may not be included in the minimum hours nec-

essay for an interdisciplinary major in communication. FALL, SPRING. [Variable credit: 1–6] 280b. Internship Research. FALL, SPRING. [Variable credit: 1–3] 280c. Internship Readings. FALL, SPRING. [Variable credit: 1–3]

289. Independent Study. A research project in rhetorical criticism to be arranged with the individual instructor. Designed for students who have taken either 220 or 221. FALL, SPRING. [Variable credit: 1–3; may be repeated to a maximum of 6] Demo, Kovalcheck, Morris, Sloop.

290. Directed Readings. Supervised reading and writing in a selected field of the discipline under the guidance of a faculty supervisor. Consent of both the faculty supervisor and the director of undergraduate studies required. Normally open only to majors in Communication Studies. FALL, SPRING. [3, not to exceed total of 6 in 289, 290 combined.] Staff.

294. Selected Topics in Communication Studies. May be repeated for credit if there is no duplication of topics. SPRING. [3] Staff.

295–296. Seminars in Selected Topics. Topics of special interest as announced in the *Schedule of Courses*. Either or both 295, 296 may be repeated for credit once if there is no duplication of topic. Prerequisite: 15 hours of Communication Studies. [3–3] Staff.

Theatre

Starred courses 100 and 115W or consent of the instructor is prerequisite for the following courses: 212–213–214, 219, 220, and 230. All other prerequisites are listed in the course descriptions.

★**100. Fundamentals of Theatre.** An introduction to the various elements which combine to form a theatrical experience; the development of critical standards to judge these elements in performance. FALL, SPRING. [3] Ullom, Franck, Pollard.

110. Introduction to Theatrical Production. Contemporary concepts, methods, and practices employed in the planning and implementation of stage scenery and lighting. Communication, creative problem solving, and organizational management through research, lecture, and class discussion. FALL. [3] Jordan.

★**115, 115W. Freshman Seminar.** [3]

170. Introduction to Film Making. Basics of motion picture production through the creation of four short video projects. Practical analysis of shorts, documentaries, and feature films. Emphasis on storytelling with the camera. FALL, SPRING. [4] Akers.

201–202. The Development of Drama and Theatre. A historical and critical study of significant drama and the physical theatre from the beginning to 1920. 201: Aeschylus to 1642. 202: 1642 to 1920. Prerequisite: sophomore standing. FALL. [3–3] 201 (Offered alternate years); 202 (Offered alternate years) Ullom.

203. Contemporary Drama and Theatre. A critical study of significant drama and theories of theatrical production in Europe and America since 1920 with special emphasis on the emergence of the American theatre to a position of international importance. Prerequisite: sophomore standing. SPRING. [3] Ullom. (Offered alternate years)

204. Development of the American Theatre. (Also listed as American and Southern Studies 205) Theatrical activity in the United States from the Colonial period to the present. The course will include the reading of selected plays. Prerequisite: sophomore standing and 100 or 115W. SPRING. [3] J. Hallquist.

211. Rehearsal—Production. Students performing major technical assignments in university theatre productions may receive 1 hour credit per assignment at the discretion of the

technical director. Detailed plans of expected work and full reports on all crew sessions are to be submitted. Prerequisite: 212, 213, or 214 as appropriate. FALL, SPRING. [Variable credit: 1–2; may be repeated to a maximum of 3]

212–213–214. Elements of Basic Design. Physical aspects of the theatre explored as an aid to understanding and critical evaluation of their role in the art of theatre.

212. Scenery and Properties. Prerequisite: 100 or 115W and 110. FALL. [3] Franck.

213. Lighting and Sound. Prerequisite: 100 or 115W and 110. SPRING. [3] Franck.

214. Costuming and Makeup. Prerequisite: 100 or 115W. FALL. [3] Pollard.

219. Acting I. The actor's role in the theatre with emphasis on acting as artistic self expression through improvisation and development of performance skills. Prerequisite: 100 or 115W. FALL, SPRING. [3] J. Hallquist.

220. Acting II. The actor's role in the theatre with emphasis on acting as character interpretation and ensemble performance through analysis and scene study. Prerequisite: 219. Not available on a P/F basis. SPRING. [3] T. Hallquist.

221. Rehearsal—Acting. Students performing major roles in university theatre productions may receive 1 credit hour per role at the discretion of the director. Full character analysis and periodic reports of rehearsal progress are required. Prerequisite: 220. FALL, SPRING. [Variable credit: 1–2; may be repeated to a maximum of 3]

223. Problems of Acting Style. Advanced scene study, investigating methods used today to perform drama of past eras which used non-realistic styles. Prerequisite: 220. Not available on a P/F basis. SPRING [3] J. Hallquist. (Offered alternate years)

225. Playwriting. Instruction in writing plays with critical attention to dramatic themes and characterization. Prerequisite: 100 or 115W and consent of the instructor. SPRING. [3] Akers.

227. Screenwriting. (Also listed as English 223) An introduction to the techniques of screenwriting. Admission by consent of the instructor. FALL. [3] Akers.

230. Play Direction. Play direction as an aid to critical understanding and appreciation of the theatre. Development of techniques. Prerequisites: 219. FALL. [3] T. Hallquist.

232. Shakespeare in the Theatre. An intensive analytical study of selected plays and scenes designed to acquaint the student with the interaction between script, theatre, and audience in terms of production in the theatre. SPRING. [3] T. Hallquist.

271. American Film Forms. A critical study of major forms of feature-length motion pictures especially associated with American film-making. Representative examples of five major genres. SUMMER. [3] J. Hallquist.

280. Theatre in London. An intensive overseas summer study program in contemporary British theatre. In London students attend fifteen productions covering a broad spectrum of theatrical offerings, and weekly seminars with artists and administrators from the British professional stage. Prerequisite: either Theatre 100 or English 105W. [3] Staff.

289. Independent Study. A research project in selected aspects of theatre and drama to be arranged with the instructor. FALL, SPRING. [Variable credit: 1–3] Staff.

294. Selected Topics in Theatre. Intensive study of a particular area of theatre. Emphasis on personal investigation and written reports. [3]

299a–299b. Senior Honors Thesis. Independent research and completion of an honors thesis, done in consultation with a member of the faculty in Theatre. Open only to those who qualify to begin honors work in Theatre. FALL, SPRING. [3–3]

Communication of Science, Engineering, and Technology

THE College of Arts and Science offers options to students interested in the communication of scientific, engineering, and technical matters as preparation for careers in various fields. Communication of information and knowledge is important between the public and the research communities and, indeed, within these communities. This interdisciplinary subject, as a potential separate career and as an important contribution to communication within other professional commitments, provides an education that goes beyond conventional disciplines.

Students may take the optional minor outlined below or may pursue an individually approved interdisciplinary major. A predefined interdisciplinary contract major model is available in the office of the Department of Communication Studies and Theatre.

This interdisciplinary minor, outlined below, is composed of courses that combine significant work in communication studies, the natural and social sciences, engineering, and the humanities. The minor complements concentrations in many programs in the undergraduate schools. The course work extensively covers a rigorous schedule in nine categories. Full course descriptions are provided under their home departments or programs. Students interested in the minor can receive advice from Kassian A. Kovalcheck, Jr., Chair, Department of Communication Studies and Theatre, or Charles R. Chappell, Adjunct Professor of Physics, who serve as advisers to the program.

Minor in Communication of Science, Engineering, and Technology

The minor in Communication of Science, Engineering, and Technology consists of 27 or 28 hours of course work distributed by fulfilling one course from each of the nine categories:

- a) One 200-level natural science course from among those on this list:
Biological Sciences: 201, Introduction to Cell Biology; 240, Developmental Biology; Biology: 201, Introduction to Cell Biology; 215, Comparative Animal Physiology; 240, Developmental Biology; Chemistry: 210, Analytical Chemistry I; 211, Analytical Chemistry II; 220a–220b, Organic Chemistry; Geology: 201, Global Changes and Global Issues; 220, Life Through Time; 250, Soil and Environment; 262, Quaternary Geology; Molecular Biology: 201, Introduction to Cell Biology; 210, Principles of Genetics; 211, Genetics Laboratory; or 220, Biochemistry I; 240, Developmental Biology; Physics: 221, Classical and Modern Optics; 224, Physical Analysis of Biological Systems; 228, Physics of Medical Imaging. [3–4]
- b) Either Engineering Science 159, Engineering Failure: The Dark Side of Technology; or Science, Technology, and Humanities 190, The Evolu-

tion of Modern Technology.	[3]
c) One of the following: Biomedical Engineering: 251, Systems Physiology; Civil Engineering: 211, Wastewater Treatment; 271, Environmental Chemistry; 260, Solid Waste Management; Computer Science: 201, Program Design and Data Structures; Electrical and Computer Engineering: 200, Elements of Electrical Engineering; Management of Technology: 214, Technology, Business, and Public Policy; 278, The Technical Basis for Environmental Policy.	[3]
d) Science, Technology, and Humanities 205, Risk, Science, and Policy.	[3]
e) Communication Studies 237, The Communication of Science, Engineering, and Technology	[3]
f) Either Communication Studies 200, Argumentation and Debate or 201, Persuasion.	[3]
g) One of the following: Communication Studies: 241, Rhetoric of Mass Media; 220, Rhetoric of the American Experience: 1640–1865; or 221, Rhetoric of the American Experience: 1865 to the Present.	[3]
h) English 120W, Intermediate Composition.	[3]
i) One of the following: Political Science: 242, Political Communication; 253, Ethics and Public Policy, or 255, Public Policy Problems.	[3]
Total	27–28

Comparative Literature

1 THIS program familiarizes students with the global context of the Western tradition, as well as with the Western tradition in literature and culture. Students study European, American, and World literature, with an emphasis on theory and interpretation. The program is directed by Earl Fitz, Professor of Spanish, Portuguese, and Comparative Literature. Students should fulfill 36 credit hours, according to the following requirements.

Program of Concentration in Comparative Literature

I. Humanities, Tradition and the World

Three courses (9 credit hours) in literature in translation including Humanities 140 and 141 and one other course. The additional course of literature in translation can be a course in Humanities beyond 141, or can come from any Department or Program within the College as approved by the Program Director. (Examples include German 245–246, German Masterpieces in English Translation; Philosophy 210/Classics 210, Ancient Philosophy; Religious Studies 108, Themes in the Hebrew Bible; Russian 221–222, Survey of Russian Literature; Spanish/Portuguese 293, Contemporary Latin American Prose Fiction in English Translation.) Selected Freshman Seminars (115s) may qualify if approved by the Director of the Program.

II. Primary Literature Field

Three courses (9 credit hours). A student who is also pursuing a major in the language chosen to satisfy the Primary Literature Field may count 6 appropriate hours of the language major towards the Primary Literature Field, and need not take the remaining 3 hours in the Primary Literature Field, but may take instead an additional 3 hours in the Secondary Literature Field.

Literature in the candidate's language of choice, other than the student's native language. Standard literary languages include (but are not limited to) French, Italian, German, Russian, Spanish, Portuguese, Latin and Greek. Courses may be selected from the attached list or in consultation with the Director of the Program, or with the Program's Director of Undergraduate Studies.

Courses based on texts studied in translation do not satisfy this requirement.

Courses satisfying this requirement include the following:

English: 208a–b, Representative British Writers; 210, Shakespeare; 211, Representative American Writers; 212, Southern Literature; 220, Chaucer; 221, Medieval Literature; 230, The Eighteenth-Century English Novel; 231, The Nineteenth-Century English Novel; 232a–232b, Twentieth-Century American Novel; 248, Sixteenth Century; 249, Seventeenth-Century Literature; 250, English Renaissance: The Drama; 252a–252b, Restoration and the Eighteenth Century; 253, The Age of Pope and Johnson; 254a–254b, The

Romantic Period; 255, The Victorian Period; 256, Modern British and American Poetry, Yeats to Auden; 257, Seventeenth-Century Prose; 258, Contemporary British and American Poetry; 259, Nineteenth Century American Poetry; 260, Nineteenth-Century American Women Writers; 262, Literature and Law; 263, African American Literature; 264, Modern Irish Literature; 266, Nineteenth-Century American Literature; 271, Caribbean Literature; 279, Modern Drama; 280, Twentieth-Century British Drama; 281, The English Lyric; 283, Satire; 285, Restoration and Eighteenth-Century Drama; 286a–286b, Twentieth-Century Drama; 287, Love and the Novel.

French: 220, Introduction to French Literature; 222, Introduction to Francophone Literature.

Literature: 232, French Poetry from Villon to Malherbe; 235, Farce and Comedy; 236, Tragedy and *drame*; 237, The Early Modern Novel; 238, The Twentieth-Century Novel; 239, The African Novel; 240, Rabelais, Montaigne, and Their Times; 253, Literature of the Fantastic; 255, French Feminist Thought; 257, The Nineteenth-Century Novel and Society; 260, Enlightenment and Revolution; 261, Age of Louis XIV; 265, From Romanticism to Symbolism; 267, Twentieth-Century French Literature; 270, The French Literary Tradition.

German: 221–222, Background and Main Currents of German Literature; 235, German Romanticism; 248, The German Lyric; 262, German Literature of the Middle Ages; 263, The Age of Goethe; 264, Nineteenth-Century Drama; 265, Twentieth-Century Drama; 266, Twentieth-Century Prose; 267, The German Novel of the Twentieth Century; 268, Modern German Short Story; 269, East German Literature; 280, *Sturm und Drang*.

Spanish: 203, Spanish and South American Literature; 230, Development of Lyric Poetry; 231, The Origins of Spanish Literature; 232, Literature of the Spanish Golden Age; 233, Modern Spanish Literature; 234, Contemporary Spanish Literature; 236, Contemporary Literature of Spanish America; 237, Contemporary Lyric Poetry; 239, Development of the Novel; 240, The Contemporary Novel; 244, Afro-Hispanic Literature; 246, *Don Quixote*; 251, Development of Drama; 252, Contemporary Drama; 260, Development of the Short Story; 281, Theory and Praxis of Drama.

Classical Languages and Literatures: Greek 204, Intermediate Greek: Homer's *Iliad*; Greek 215, The Greek Tragedians; Greek 216, Readings in Plato and Aristotle; Latin 201, Catullus and Horace; Latin 202, Ovid; Latin 206, Cicero and the Humanistic Tradition; 212, Roman Comedy; 215, The Roman Historians.

III. Secondary Literature Field

Two courses (6 credit hours). Literature in another language from that chosen for Primary Field, courses customarily chosen from attached list or in consultation with the Director, or the Program's Director of Undergraduate Studies. The language of study may be the student's native language, including English. If the language is English, course material should consist primarily of works originally written in English and not translated. American, British, or post-colonial literature in English are all eligible.

Courses based on texts studied in translation do not satisfy this requirement.

IV. World Literature

One course (3 credit hours) in literature in translation in Classics or Middle Eastern, Far Eastern, African or other non-modern or non-European Literatures, including Arabic, Chinese, Japanese, and Hebrew. Eligible courses may be taken in Comparative Literature or in other departments and programs.

V. Analysis and Theory

One course (3 credit hours) at sophomore level or higher, in methods and paradigms in interpretive disciplines including among subject areas Anthropology, Art History, Cognitive Psychology (Peabody College), History, Political Science, Philosophy, Religious Studies, Women's Studies.

Courses fulfilling this requirement would, for example, include the following:

Anthropology: 203, Anthropological Linguistics; 206, Theories of Culture and Human Nature; 209, Human Diversity; *Classical Studies*: 227, Ancient Greek Art and Architecture; *Fine Arts*: 215, Formation and Power of Christian Images; 227, Ancient Greek Art and Architecture; *Philosophy*: 212, Modern Philosophy; 226, Phenomenology; 231, Philosophy of History; 241, Contemporary Issues in Aesthetics; *Political Science*: 206, Foundations of Marxism; 207, Liberalism and Its Critics; *Psychology and Human Development*: 1700, Social and Emotional Context of Cognition (Peabody); *Religious Studies*: 120, Religion, Sexuality, Power; 223, Ethics and Feminism 234, Post-Freudian Theories; 235, Freudian Theories and Religion; *Sociology*: 239, Men, Women and Society (this is the same as Anthropology 242 and Women's Studies 242); *Women's Studies*: 223, Ethics and Feminism; 246, Feminist Theory.

VI. Elective

One elective course (3 credit hours) from one of the categories in sections I–V. Particular “Selected Topics” courses may be approved upon occasion. Final selection of all courses satisfying requirements in sections I–VI must be approved by the Program's Director of Undergraduate Studies.

VII. Senior Seminar

One course (3 credits): Senior Seminar in Methods in Comparative Literature and Theories of Reading and Interpretation.

Honors

Students wanting to qualify for consideration for the Honors Program in Comparative Literature must have a grade point average of 3.000. To graduate with honors in Comparative Literature, a student must (a) complete all the requirements of the standard Comparative Literature major course work including 6 hours in Honors sections (299a–299b); b) maintain a 3.000 average overall and 3.300 in the major; c) be admitted into the Honors seminar (299a) of the fall of the senior year; d) complete a thesis

in the senior year (299b); e) pass an oral examination, based principally on the thesis, in the spring of the senior year.

Honors students are encouraged to take one graduate course in their primary literature field, or in Comparative Literature. Students taking the Honors seminar (299a) are not required to take the Senior Seminar in Methods in Comparative Literature and Theories of Reading and Interpretation, though they may choose to take this course as one of their electives.

Minor in Comparative Literature

The minor in Comparative Literature consists of a minimum of 18 credit hours. Students are required to take 3 courses (9 credit hours) in literature in translation, including Humanities 140 and Humanities 141 and one other course, as described in section I of requirements for the major. Students must also take two courses (6 credit hours) in primary literary field, as in Section II of requirements for the major, and the Senior Seminar in Methods in Comparative Literature and Theories of Reading and Interpretation (3 credit hours).

105W. World Drama. (Also listed as Humanities 105W) Representative plays of world literature with an examination of different styles and forms, including diverse formal concepts, and the relation of drama to cultural contexts. FALL, SPRING. [3] Staff.

106W. Literature of Argument and Persuasion. (Also listed as Humanities 106W) Modes of persuasion, focusing on the nature of persuasion and argument in nonfictional discourse. Aristotle's *Rhetoric*, Machiavelli's *The Prince*, Milton's *Areopagitica*, and Woolf's *A Room of One's Own*. FALL, SPRING. [3] Staff.

107W. Literature and the Interpretation of Culture. (Also listed as Humanities 107W) Modes of analyzing contemporary cultural phenomena, including advertisements, films, and novels. One novel (both canonical and popular) and one film are included. FALL, SPRING. [3] Staff.

108W. World Fiction: Short Stories. (Also listed as Humanities 108W) Short fiction from ancient to modern times, and from African, Asian, and European literary traditions. Concepts of transhistorical value encounter particular historical and social contexts. Aesop, "Anansi" stories, the *Bible*, *Thousand and One Nights*, Cervantes, Diderot, Mansfield. FALL, SPRING. [3] Staff.

115, 115W. Freshman Seminar. [3]

140–141. Great Books of the Western Tradition. (Also listed as Humanities 140–141) Discussion of a selected number of great books from the points of view of literary expression and changing ideologies. 140: classical Greece through the Renaissance. 141: the seventeenth century to the contemporary period. FALL, SPRING. [3–3] Staff.

150–151. Humanities. (Also listed as Humanities 150–151) Analysis and discussion of a selected number of the great works of literature, philosophy, and the arts, representative of the main periods and intellectual movements in Western civilization. The works are studied primarily in relation to the permanent humanistic values of our culture. 150: the Greek, medieval, and Renaissance periods. 151: the modern period from the seventeenth century to the present. 150 FALL [3] Staff; 151 SPRING [3] McCarthy (Germanic and Slavic Languages).

156. Images of Women. (Also listed as Humanities 156 and Women's Studies 150) An introduction to the study of images and roles of women in Western society as reflected primarily in literature and art. Readings and discussions will concentrate on modern works that draw for background on Greek and Roman mythology, the *Bible*, medieval and Renaissance materials. FALL, SPRING. [3] Staff.

160–161. Selected Topics. (Also listed as Humanities 160–161) [3–3] (Not currently offered)

175. The Classical Tradition and English Poetry. (Also listed as Classics 175 and Humanities 175) Survey of selected poetic genres, forms, and topics from Homer through Auden. [3] Staff. (Not currently offered)

202. Themes in World Literature. (Also listed as Humanities 202 and Religious Studies 248) Analysis and discussion of major themes in a selected number of the great works of literature, philosophy, and the arts which have been important to civilizations both Western and Eastern from antiquity to 1600. FALL. [3] Staff.

203. Themes in World Literature. (Also listed as Humanities 203) Analysis and discussion of major themes in a selected number of the great works of literature, philosophy, and the arts which have been important to civilizations both Western and Eastern from 1600 to the present. SPRING. [3] Staff.

215. Travel, Adventure, and Discovery in Western Literature. (Also listed as English 215 and Humanities 215) The significance and uses of imaginary travel in the western literary tradition, from the *Odyssey* to the present, with emphasis on the Enlightenment. Topics include scientific discovery, colonialism, and gender. [3] Bowen (French and Italian). (Not currently offered)

224. Dante's Divine Comedy. (Also listed as English 224, Humanities 224, and Italian 224) Reading and analysis of the complete *Inferno* and a study of selected cantos from the *Purgatorio* and *Paradiso*, all in English translation. [3] Franke (French and Italian). (Offered 2001/02)

225. European Realism. (Also listed as European Studies 225 and Humanities 225) Analysis of representative nineteenth-century novels which gave rise to current theories of realism. Balzac, Dickens, Clarín, Galdós, and Dostoevsky. [3] McCarthy (Germanic and Slavic Studies). (Not currently offered)

230. Contemporary Literature of Central Europe. (Also listed as Humanities 230) Fiction in translation from Czechoslovakia, Poland, Hungary, Yugoslavia, and East Germany. Kafka's vision of modernity from the tragic to the absurd, as interpreted by Kafka and his heirs, including Kundera, Schulz, and Schneider. [3] (Not currently offered)

237. Medieval Women in their Own Words. (Also listed as Humanities 237 and Women's Studies 239) European writers from the late classical period through the Middle Ages. Autobiographies, hymns, fictions in poetry and prose with attention paid to ethnic and linguistic difference, cultural background, religious and philosophical ideas. Focus on political influence, personal relations, health and other life concerns, condition in society, and self-perception as writers. SPRING. [3] Barrett.

239. Religious Autobiography. (Also listed as Humanities 239 and Religious Studies 239) The construction of identity in religious autobiography: motivations (personal salvation, witness, proselytism); relationships among self, God, and religious tradition; role of memory; cultural, gender, and religious differences. Readings may include Augustine, Gandhi, Malcolm X, Angelou, Wiesel. SPRING. [3] Geller.

240. Literatures of Africa. (Also listed as Humanities 240) Literatures of Africa, including works originally composed in Arabic and in French, English, or other European languages as well as in various African languages. Cultural variations are emphasized, including differences in linguistic backgrounds and religious beliefs (Islamic, Christian, and indigenous). Texts taught in translation. Authors typically included: Mafouz, Achebe, Ngugi, Soyinka, Djébar, Sembene. [3] Nzabatsinda (French). (Not currently offered)

265. Theories of Imitation. (Also listed as Humanities 265 and Spanish 265) Classical and Renaissance theories of translation and imitation, as exemplified by sixteenth- and seventeenth-century literature, particularly Spanish pastoral poetry. Readings in the theory of imitation from Aristotle to Borges. Lectures and readings in English. For credit toward the Spanish major, readings and written work must be done in Spanish. [3] (Not currently offered)

278. Colonial and Post-Colonial Literature. (Also listed as English 278 and Humanities 278) Literature from countries colonized by Europe from eighteenth to twentieth century. Examines implications of colonial encounter, and formation of idea "post-colonial" culture. Subjects include language, freedom and agency, gender roles, representation of space, relation between power and narrative. Such authors as: Foster, Coetzee, Okri, Tagore, Chatterjee, Kincaid, Rushdie, Soyinka. [3] (Not currently offered)

284. The Comic Novel. (Also listed as English 284 and Humanities 284) Novels in the European tradition of humorous writing, including works by Rabelais, Cervantes, Fielding, Dickens, Joyce, and Amis. [3] Gottfried (English). (Not currently offered)

294. Special Topics. (Also listed as Humanities 294) Topics of special interest, as announced in the *Schedule of Courses*. Individual courses are at a more advanced level than 160–161 and may have prerequisites. [3]

299a Honors Seminar. Background for writing the Honors thesis. Comparatist methodologies, critical approaches, problems of interdisciplinary study. Methods of research, choosing a topic. Advanced writing exercise in preparation for Honors thesis. Limited to seniors admitted to the honors program in Comparative Literature. [3]

299b. Honors Thesis. Prerequisite: 299a. [3]

Computer Science

1 COURSES in computer science are offered by the School of Engineering. Candidates for the Bachelor of Science degree majoring in any discipline in the College of Arts and Science may choose computer science as a second major. (For details of B.S. degree requirements, see Degrees Offered by the College.) A minor in computer science is also offered to candidates for the B.S. degree. Students earning a second major or a minor in computer science may not take computer science courses on a Pass/Fail basis.

Program of Concentration in Computer Science for Students Enrolled in the College

The second major in computer science requires 34 hours as follows:

1. *Programming (4 hours)*: 101.
2. *Core courses (24 hours)*: 201, 212, 231, EECE 116, 250, 270, 281.
3. *Project course (3 hours)*: selected from 265, 269, 276, 277, 282, 283, 284.
4. *Electives (3 hours)*: selected from courses numbered 240 or above.

Minor in Computer Science

The minor in computer science requires 20 hours of computer science courses as follows:

1. *Programming (4 hours)*: 101.
2. *Core courses (10 hours)*: 201, 212, 231.
3. *Electives (6 hours)*: selected from courses numbered 250 or above.

101. Programming and Problem Solving. An intensive introduction to algorithm development and problem solving on the computer. Intended for engineering majors and others who already have some familiarity with computer programming. Structured problem definition, top down and modular algorithm design. Running, debugging, and testing programs. Program documentation. FALL, SPRING. [4] Staff.

151. Computers and Ethics. Analysis and discussion of problems created for society by computers, and how these problems pose ethical dilemmas to both computer professionals and computers users. Topics include: computer crime, viruses, software theft, ethical implications of life-critical systems. Technology-society elective. FALL, SPRING. [3]

201. Program Design and Data Structures. Continuation of CS 101. The study of elementary data structures, their associated algorithms, and their application in problems; rigorous development of programming techniques and style; design and implementation of programs with multiple modules, using good data structures and good programming style. Prerequisite: 101. FALL, SPRING. [4] Staff.

212. Discrete Structures. (Also listed as Mathematics 214) A broad survey of the mathematical tools necessary for an understanding of computer science. Topics covered include an introduction to sets, relations, functions, basic counting techniques, permutations, com-

binations, graphs, recurrence relations, simple analysis of algorithms, O-notation, Boolean algebra, propositional calculus, and numeric representation. Prerequisite: One course in computer science or two semesters of calculus. FALL, SPRING. [3] Staff.

231. Computer Organization. Hierarchical structure of computer architecture, beginning at the lowest level with a simple machine model. Processors; process and input/output handling; assembler concepts. Graduate credit not given for computer science majors. Prerequisite: 201. Corequisite: EECE 116. FALL, SPRING. [3] Staff.

240a–240b. Undergraduate Research. Open to qualified majors with consent of instructor and adviser. No more than 3 hours may be counted toward the computer science major. Prerequisite: 231. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed a total of 6]

242. Special Topics in Computer Science. [Variable credit: 1–3]

250. Algorithms. Advanced data structures; analysis of important algorithms for searching, sorting, and string processing; mathematical, geometric, and graphic algorithms; polynomial-time complexity and intractable problems. Prerequisite: 201 and 212. FALL, SPRING. [3] Staff.

252. Theory of Automata, Formal Languages, and Computation. Finite-state machines and regular expressions. Context-free grammars and languages, Pushdown automata, Turing machines. Undecidability. The Chomsky hierarchy. Computational complexity. Prerequisite: 212. SPRING. [3]

255. Introduction to Numerical Mathematics. (Also listed as Mathematics 226) Numerical solution of linear and non-linear equations, interpolation and polynomial approximation, numerical differentiation and integration, least-squares curve fitting and approximation theory, numerical solution of differential equations, errors and floating point arithmetic. Application of the theory to problems in science, engineering, and economics. Student use of the computer is emphasized. Prerequisite: Computer programming and linear algebra. FALL, SPRING. [3] Staff.

257. Introduction to Optimization. (Also listed as Mathematics 288) Simplex theory, search techniques, gradient methods; dynamic, integer and geometric programming. Use of theory to solve real problems. Applications to various areas of management science, engineering, economics, and physical sciences. Prerequisite: Computer programming and linear algebra. SPRING. [3] Staff.

260. Artificial Intelligence. Introduction to the principles and programming techniques of artificial intelligence. Strategies for searching, knowledge representation and automatic deduction, and learning and adaptive systems. Survey of applications. Prerequisite: 201, 212. FALL. [3] Staff.

265. Introduction to Database Management Systems. Logical and physical organization of databases. Data models and query languages, with emphasis on the relational model and its semantics. Concepts of data independence, security, integrity, and concurrency. Prerequisite: 201. FALL. [3] Staff.

269. Project in Artificial Intelligence. Students work in small groups on the specification, design, implementation, and testing of a sizable AI software project. Projects (e.g., an “intelligent” game player) require that students address a variety of AI subject areas, notably heuristic search, uncertain reasoning, planning, knowledge representation, and learning. Class discussion highlights student progress, elaborates topics under investigation, and identifies other relevant topics (e.g., vision) that the project does not explore in depth. Prerequisite: 260. SPRING. [3] Staff.

270. Programming Languages. General criteria for design, implementation, and evaluation of programming languages. Historical perspective. Syntactic and semantic specification, compilations, and interpretation processes. Comparative studies of data types and data control, procedures and parameters, sequence control, nesting, scope and storage management, run-time representations. Non-standard languages, problem-solving assignments in a laboratory environment. Prerequisite: 231. SPRING. [4] Staff.

274. System Simulation. Introduction to simulation and comparison with other techniques. Discrete simulation models and introduction to or review of queuing theory and stochastic processes. Comparison of discrete change simulation languages. Simulation methodology including generation of random numbers and variates, design of simulation experiments of optimization, analysis of data generated by simulation experiments, and validation of simulation models and results. Selected applications of simulations. Prerequisite: 101; Mathematics 218 or 247. [3] Staff. (Not currently offered)

276. Compiler Construction. Review of programming language structures, translation, loading, execution, and storage allocation. Compilation of simple expressions and statements. Organization of a compiler including compile-time and run-time symbol tables, lexical scan, syntax scan, object code generation, error diagnostics, object code optimization techniques, and overall design. Use of a high-level language to write a complete compiler. Prerequisite: 231. [3] (Not currently offered)

277. Software Engineering. The nature of software. Object-oriented paradigm. Software life-cycle models. Requirements, specifications, design, documentation, implementation, and testing. Maintenance and object-oriented analysis. Team project of object-oriented software development. Prerequisite: 270 and 281. FALL. [3]

281. Principles of Operating Systems I. Overview of goals of operating systems. Introduction to the resource allocation and control functions of operating systems. Scheduling of processes and processors. Concurrent processes and primitives for their synchronization. Use of parallel processes in designing operating system subsystems. Methods of implementation of parallel processes on conventional computers. Introduction of notions of virtual memory, paging, protection of shared and non-shared information. Structures of files of data in secondary storage. Security issues. Case studies. Prerequisite: 231. FALL, SPRING. [3] Staff.

282. Principles of Operating Systems II. Projects involving modification of a current operating system. Lectures on memory management policies, including virtual memory. Protection and sharing of information, including general models for implementation of various degrees of sharing. Resource allocation in general, including deadlock detection and prevention strategies. Introduction to operating system performance measurement, for both efficiency and logical correctness. Two hours of lecture and one hour of laboratory. Prerequisite: 281. SPRING. [3] Staff.

283. Computer Networks. Computer communications, network architectures, protocol hierarchies, and the open systems interconnection model. Modeling, analysis, and specification of protocols. Wide area networks and local area networks including rings, buses, and contention networks. Prerequisite: 281. SPRING. [3] Staff.

284. Computer Systems Analysis. Techniques for evaluating computer system performance with emphasis upon applications. Topics include measurement and instrumentation techniques, benchmarking, simulation techniques, elementary queuing models, data analysis, operational analysis, performance criteria case studies. Project involving a real computer system. Prerequisite: 281. SPRING. [3]

East Asian Studies

DIRECTOR Derek J. Waller

ASSOCIATE PROFESSORS Yoshikuni Igarashi, James J. Lang, Derek J. Waller

ASSISTANT PROFESSORS Paula K. R. Arai, Laura A. McDaniel, Tracy G. Miller

1 EAST Asian Studies is an undergraduate program focusing attention on areas of the world that have been influenced historically by the mainstream of Sinic civilization: China proper, Inner Asia, Korea, and Japan. Students choosing an interdisciplinary major in East Asian studies broaden their intellectual perspective by undertaking critical study of one major non-Western stream of civilization. Selected, motivated students prepare for professional specialization after graduation, at academic centers geared to provide graduate education on East Asia.

Majors are encouraged to study in one or more of the programs in China and Japan described in the chapter on Additional Programs. The East Asian Studies program requires 42 hours for the major.

Program of Concentration in East Asian Studies

East Asian Studies is acceptable as an interdisciplinary program of concentration. For details, see Interdisciplinary Program of Concentration, Arts and Science. Most students begin their studies with History 154, 155, or 157, a survey of the civilization of China, Korea, and Japan from ancient times to the present. This course is normally prerequisite for further study in the field. Many students also include courses in Chinese or Japanese—or both—in their program of study, since language is an essential element in the serious study of both the traditional cultures and the contemporary problems of East Asia. Related courses available in other disciplines are listed below.

Recommended courses by subject area are as follows:

CHINESE: 201–202, Intensive Modern Chinese; 214–216, Second-Year Chinese; 241–242, Third-Year Chinese; 251–252, Fourth-Year Chinese; 289a–289b, Independent Study.

FINE ARTS: 200, Asian Art; 252, Chinese Art; 253, Japanese Art; 254, Japanese Painting and Prints; 289, Independent Research.

HISTORY: 154, History of Asian Civilization: Premodern China; 155, History of Asian Civilization: Modern China; 157, History of Asian Civilization: Japan; 247, Themes in Modern Chinese History; 248, China in Revolution; 249, History of Modern Japan; 250, Cultural and Social History of Japan's Recent Past; 294, Selected Topics in History; 295, Undergraduate Seminar in History; 296, Independent Study in History; 297, Junior Honors Seminar in History; 298, Senior Honors Research Seminar; 299, Senior Honors Thesis.

JAPANESE: 201–202, Beginning Modern Japanese; 211–212, Intermediate Modern Japanese; 241–242, Third-Year Japanese; 251–252, Fourth-Year Japanese; 289a–289b, Independent Study.

POLITICAL SCIENCE: 214, The Japanese Political System; 216, The Chinese Political

System; 287–288, Seminars in Selected Topics.

RELIGIOUS STUDIES: 130, Themes in Asian Religions; 132, Religion and Culture in Japan; 231, Women in Buddhist Traditions; 244, Buddhist Traditions; 249, Zen Buddhism.

Certain courses offered in the CIEE program in Japan can also be counted toward the major:

SOCIOLOGY/ANTHROPOLOGY: Contemporary Japanese Society: History, Culture, Institutions.

BUSINESS/ECONOMICS: The Japanese Business Firm in Its Domestic Economic Context; The Japanese Business Firm in Its Global Economic Context.

POLITICAL SCIENCE: Politics and Policy in Contemporary Japan; Japan's International Relations.

HUMANITIES: Traditional Japanese Arts and Culture; Japanese Popular Culture.

Honors Program

The honors program in East Asian Studies is a three-semester, 12-hour program of study open to majors. The honors program combines intensive reading in interdisciplinary fields with research into a particular topic. To be admitted to the program, a student must have obtained a minimum grade point average of 3.0 overall and 3.0 in courses counting toward the major, meet all other College requirements, and submit a short description of his/her program of study to the East Asian Studies Committee. Normally students will apply in the first semester of the junior year and begin honors work in the second semester, taking the following courses: East Asian Studies 297, Junior Honors Readings (3 hours); East Asian Studies 298, Senior Honors Readings (3 hours); and East Asian Studies 299a–299b, Senior Honors Thesis (6 hours). Students spending the junior year abroad—and students applying late to the program under extraordinary conditions—may delay taking East Asian Studies 297 until the first semester of the senior year.

Each candidate for honors must submit a thesis, approved by the student's major professor and two other appropriate members of the faculty. The student will also take written and oral examinations at the end of the senior year.

Minor in East Asian Studies

The minor in East Asian Studies requires 18 or 19 hours of course work and provides a broad knowledge of the languages and literature, politics, history, arts, and religions of China and Japan. Completion of History 156 and 157 is required. Students must choose four courses (12 or 13 hours) from the following list, with one course from each of A, B, and C:

- Group A:* East Asian Studies 240; History 154, 155, 157, 248, 249, 250; Political Science 214, 216
- Group B:* Fine Arts 200, 252, 253, 254; Religious Studies 132, 244, 249; East Asian Studies 294b (Japanese Literature and Culture)
- Group C:* Chinese 214 or 216 (3 hrs); Japanese 211 (5 hrs)

The courses offered in the CIEE program in Japan that may be counted toward the major (see the list of courses given above) can also be used to fulfill requirements of the minor, with any of the five courses listed in the first three categories serving to fulfill the requirement of a course in Group A and either of the two courses in the last category fulfilling the requirement of a course in Group B.

East Asian Studies 133. Asia on Film. (Also listed as Religious Studies 133) Cinematic perspectives on Asian religion and culture, Hindu, Buddhist, Taoist, Shinto, and Confucian traditions in India, Tibet, Vietnam, China, Japan, and U.S. Politics and significance of representation and interpretation. FALL. [3] Arai.

East Asian Studies 240. Current Japan–U.S. Relations. Similarities and differences in theory and practice in the United States and Japan on public policy issues such as trade, defense, environment, education, medical care, and racial prejudice. SPRING. [3] J. Auer (Peabody College).

East Asian Studies 278. Comparative Asian Development. (Also listed as Sociology 278) Development of modern India, China, and Japan. Religious, social, and artistic traditions, contact with the West, independence, modernization. SPRING. [3] J. Lang (Sociology).

East Asian Studies 289a–289b. Independent Study. Designed primarily for majors who want to study East Asian subjects not regularly offered in the curriculum. Must have consent of instructor. [Variable credit: 1–3 each semester]

East Asian Studies 294a–294b. Special Topics. Seminars or lecture courses devoted to topics in areas of competence of individual instructors and of interest to students, as announced in the *Schedule of Courses*. [Variable credit: 1–3 each semester]

East Asian Studies 297. Junior Honors Readings. General readings supervised by research adviser. [3] Staff.

East Asian Studies 298. Senior Honors Reading. General readings supervised by research adviser. [3] Staff.

East Asian Studies 299a–299b. Senior Honors Thesis. [3–3] Staff.

Economics

CHAIR Jeremy Atack

DIRECTOR OF UNDERGRADUATE STUDIES Malcolm Getz

DIRECTOR OF GRADUATE STUDIES Andrew F. Daughety

PROFESSORS Jeremy Atack, William W. Damon, Andrew F. Daughety, Robert A. Driskill, James E. Foster, Cliff J. Huang, Andrea Maneschi, Robert A. Margo, Jennifer F. Reinganum, Clifford S. Russell, John J. Siegfried, Ping Wang, John A. Weymark

PROFESSORS EMERITI Rudolph C. Blitz, Rendigs T. Fels, T. Aldrich Finegan, C. Elton Hinshaw, Gian S. Sahota, Anthony M. Tang, William O. Thweatt, Fred M. Westfield, James S. Worley

VISITING PROFESSORS Ben W. Bolch, Pulapre Balakrishnan

ASSOCIATE PROFESSORS Kathryn H. Anderson, Mario Crucini, Malcolm Getz, George H. Sweeney

VISITING ASSOCIATE PROFESSOR David B. Gordon

ASSISTANT PROFESSORS William J. Collins, Neville Jiang, David Lucking-Reiley, Anandi Mani, Charles H. Mullin, Siobhán Reilly, Peter L. Rousseau, Jesse Schwartz, Mototsugu Shintani, Alison Watts, Diana N. Weymark

SENIOR LECTURERS Elinor O'Brien Böer, Stephen G. Buckles, John Vrooman

I THE Department of Economics offers an undergraduate major and minor in economics. Qualified economics majors may elect to take graduate courses or participate in honors work.

The department offers a 21-hour minor in Financial Economics and participates with History in a concentration in Economics and History. Other economics-related minors are discussed under "Managerial Studies." A 24-hour business administration minor is being phased out. No one who entered Vanderbilt after Fall 1999 will be permitted to register for this minor.

Qualified students in the College of Arts and Science may also combine liberal arts study with professional training in business through a program with Vanderbilt's Owen Graduate School of Management. These students may earn the B.A. or B.S. degree and the Master of Business Administration degree in five years instead of the usual six.

Program of Concentration in Economics

The requirements for the major include completion of at least 33 hours in economics courses, including 100, 101, 150 (or both Math 218 and Math 219), 231, 232. At least 9 hours must be in courses numbered 250 or above. Financial Economics 140 may not be taken for credit in the program after May 2000. Sections two and three of Economics 115 may be counted as electives. No more than 3 hours of independent study may be included in the minimum 33 hours required for the major.

Mathematics Prerequisite

Two semesters of calculus are strongly recommended for majors and minors in the department. Calculus is a prerequisite for Economics 150, 231, and 232, courses that are required in the economics major and minor (150, and 231 are also required in the business administration and financial economics minors). At least one semester of calculus is required for all our programs.

24-Hour Minor in Business Administration

The requirements for the minor include completion of at least 24 hours of work drawn from business administration and economics. One semester of calculus, Economics 100, and Economics 101 are prerequisite. The required core consists of Business Administration 140, Economics 150 (or both Math 218 and Math 219), Economics 231, and Business Administration 240. At least 12 hours of electives must be chosen from all other business administration courses.

Limitations. No more than 3 hours of independent study may be counted toward the 24-hour requirement. Students minoring in business administration must have another field of concentration. No more than 30 hours in business administration may be counted in the 120 hours required for graduation. This minor is being phased out and is unavailable to anyone who entered Vanderbilt after Fall 1999.

Concentration in Economics with Minor in Business Administration

Requirements are completion of 18 hours in addition to the 33 required in the economics major, including all the requirements of the minor in business administration. Students should plan their course schedules in consultation with their advisers. Note that this option is not available to students who entered Vanderbilt after Fall 1999.

Minor in Economics

The minor in economics requires 21 credit hours as follows: Economics 100 and 101, Principles of Economics; Economics 150, Economic Statistics (or Math 218 and Math 218L); and Economics 231, Intermediate Microeconomic Theory; and 9 credit hours of electives. At least one elective must be numbered 250 or above. One semester of calculus is prerequisite to Economics 150 and Economics 231. Financial Economics 140 may not be taken for credit in the minor in economics.

Minor in Financial Economics

The minor in financial economics requires 21 credit hours as follows: Financial Economics 140, Accounting; Economics 150, Economic Statistics (or Math 218 and 218L); Economics 231, Intermediate Microeconomic Theory; and 9

credit hours of electives chosen from the following list or other courses in Financial Economics.

FinEc 220 Managerial Accounting
FinEc 240 Corporate Finance
FinEc 261 Investment Analysis
FinEc 275 Financial Management
Econ 209 Money and Banking
Econ 245 History of American Enterprise
Econ 259 Financial Instruments and Markets
Econ 264 Open Economy Macroeconomics

One semester of calculus is prerequisite to Economics 150, Mathematics 218, and Economics 231. Economics 100 and 101 are prerequisite to the economics courses and to the Financial Economics courses numbered above 220. Economics 232 is prerequisite to Economics 259 and 264. Economics majors must complete 15 credit hours in Financial Economics in order to complete the minor in financial economics.

Honors Program in Economics

An honors program is available in economics. This program is designed for highly motivated students interested in doing independent research. Honors candidates must take two semesters of calculus and 36 hours of work in economics, including all 15 hours of required courses, plus Economics 253, Introduction to Econometrics. They also take 6 hours of regular electives along with 12 hours of work in policy seminars, Independent Study (Economics 291a–b), Senior Thesis (Economics 292a–b), and Honors Seminar (Economics 295a–b). Students who are not sure whether they want to complete the honors program are urged to take an additional 3-hour elective. Honors candidates are also required to write a senior thesis and to defend it in an oral examination. On satisfactory completion of this program, a student will graduate with Honors or with High Honors in economics. Interested students who meet the College's requirements for honors candidacy as set forth elsewhere in this catalog should consult the director of undergraduate studies no later than the fall term of their junior year.

Program of Concentration in Economics and History

This is an interdisciplinary program split between Economics and History that provides a more focused program of study while requiring fewer credit hours than a double major in the two fields. The program consists of 45 hours of course work of which 9 hours are from a common economic history core and the remaining 36 credit hours are evenly divided between Economics and History. Students are expected to observe course-specific requirements in each department. The details are spelled out below.

Joint Five-Year Baccalaureate–M.B.A. Program

Students in this joint program receive the baccalaureate degree from the College of Arts and Science under the senior-in-absentia program and receive the master's degree in business administration from Vanderbilt's Owen Graduate School of Management. Students wanting to apply for admission may major in any subject in the College and need not minor in Business Administration. For details of this program see the chapter on Additional Programs in the College.

Licensure for Teaching

Candidates for teacher licensure in economics at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

Economics

Starred courses 100 and 101 are prerequisite for all 200-level courses in the department, with the following exceptions: Business Administration 140 (no prerequisite); Economics 150 (prerequisite is one semester of calculus; some background in economics is desirable); and Economics 222 (prerequisite is Economics 100).

★100. Principles of Macroeconomics. The role of scarcity and prices in allocating resources. National income, fluctuations in unemployment and price level, monetary and fiscal policy. FALL, SPRING. [3] Gordon, Vrooman.

★101. Principles of Microeconomics. The behavior of households and business in markets. Competition, monopoly, and rivalry in product and factor markets. Equilibrium. Income distribution. International trade. Prerequisite: 100. FALL, SPRING. [3] Buckles.

115, 115W. Freshman Seminar. [3]

150. Economic Statistics. The use of quantitative data in understanding economic phenomena. Probability, sampling, inference, and regression analysis. Prerequisite: one semester of calculus. (Math 140, 150a, or 155a or equivalent); some background in economics is desirable. FALL, SPRING. [3] Staff.

209. Money and Banking. A study of commercial banks and other intermediaries between savers and investors in the United States, including the government's role as money creator, lender, and regulator of private credit, and the effects of financial institutions on aggregate economic activity. FALL, SPRING. [3] Attack, Crucini, Gordon.

212. Labor Economics. Introduction to labor markets in the United States. Foundations and applications of labor supply and demand, immigration and immigration policies, investment in human capital, wage policies of employers, minimum wage legislation, labor market discrimination and remedial programs, effects of labor unions, and unemployment. Not intended for students who have completed 231. SPRING. [3] Finegan.

222. Latin American Economic Development. Recent economic growth and structural change of Latin American economies. The general issues of development economics, such as the mobilization of savings and capital formation, import-substituting industrialization, inflation, agricultural reform, regional and national economic integration, population growth

and migration, and balance-of-payments problems. No credit for graduate students in economics. [3] (Not currently offered)

225. Applied Market Analysis. Characteristics of markets, product development, channels of distribution, promotional activities, and pricing strategies. Economic and technological issues in marketing. Emphasis on institutional details and case studies. Prerequisite: 150. FALL or SPRING. [3] Staff. (Not offered 2000/01)

226. Economic History of the United States. (Also listed as History 290) Economic development of the United States from the Colonial period to the present. Interrelated changes in economic performance, technology, institutions, and governmental policy. SPRING. [3] Attack.

231. Intermediate Microeconomic Theory. Development of the techniques of analysis for problems of resource allocation. Theories of choice and production for individual economic agents in competitive and monopolistic environments. Behavior of markets. Determination of prices, wages, interest, rent, and profit. Income distribution. No credit for graduate students in economics. Prerequisite: one semester of calculus. FALL, SPRING. [3] Staff.

232. Intermediate Macroeconomic Theory. National income accounting and analysis. Classical, Keynesian, and contemporary models determining national income, employment, liquidity, price level, and economic growth. No credit for graduate students in economics. Prerequisite: one semester of calculus. FALL, SPRING. [3] Staff.

235. Strategic Analysis. Introduction to sequential and simultaneous games. Backward induction, equilibrium, pure and mixed strategies. Cooperation and conflict, the prisoner's dilemma, threats, promises, and credibility. Brinkmanship, uncertainty, the role of information, auction design, bidding strategies, and bargaining. Voting and agenda control. No credit available for students who have completed ECON 115, Section 2, Strategic Thinking and Interactions. FALL. [3] J. Schwartz.

245. History of American Enterprise. (Also listed as History 291) Evolution of the form, organization, and structure of the American business firm from colonial times to the present. Entrepreneurs, labor management, financial capital, distribution, invention, and government regulation. FALL. [3] Carlton.

246. Unions, Management, and Public Policy. Labor unions and industrial relations in the United States with special attention to public policy issues. The growth and decline of the labor movement, the evolution of national labor policy, the National Labor Relations Act, union government, collective bargaining, public sector unionism, and the arbitration of grievances. SPRING. [3] Finegan. (Not offered 2000/01)

249a–249b. Selected Topics in Economics. Topics to be announced. May be repeated more than once if there is no duplication of topic. [Variable credit: 1–3 each semester]

251. Wages, Employment, and Labor Markets. Theories of wages and employment, dual labor markets, internal labor markets, and labor's share of national income. Empirical studies of labor mobility, the effects of unions on relative wages and resource allocation, occupational and industrial wage differentials, and selected labor markets. Prerequisite: 150 and 231, or consent of instructor. SPRING. [3] Anderson.

252. Antitrust Economics. The purposes and effects of antitrust laws in the United States. Economic theory applied to the problems of preserving and enhancing competition. Evaluation of incentives created by judicial precedents in terms of efficiency and performance. Not open to students who have taken 224. Prerequisite: 231. FALL, SPRING. [3] Siegfried, Klein.

253. Introduction to Econometrics. Quantitative methods of economic analysis. Measurement, specification, estimation, and interpretation of economic models.

Introduction to econometric computation using microcomputers. No credit for graduate students in economics. Prerequisite: 150, 231, and 232. FALL, SPRING. [3] Mullin.

254. Public Finance. Theories of the state and collective decisions, fiscal federalism, public goods and externalities. Tax theory: equity, efficiency, and growth. Taxation of goods, factors, and corporations. Cost-benefit analysis. Prerequisite: 231 or equivalent. FALL. [3] Getz.

256. Seminar in Macroeconomic Policy. Intensive study of three or four current problems in economic policy. Studies in topics such as macroeconomic policy for the year ahead, financial market issues, international economic policy issues. Prerequisite: 231 and 232. Limited to majors in economics and public policy. FALL, SPRING. [3] Buckles.

257. Seminar in Microeconomic Policy. Intensive study of three or four current problems in microeconomic policy. Prerequisite: 231. Limited to majors in economics and public policy. FALL, SPRING. [3] Vrooman.

259. Financial Instruments and Markets. Theoretical and empirical approaches to the analysis of monetary and other financial instruments. Portfolio analysis, interest rate risk, and financial futures and options markets. Prerequisite: 231 and 232. FALL, SPRING. [3] Rousseau.

262. History of Economic Thought. Evolution of economic ideas from the ancient Greeks to the contemporary world with attention to the seminal thoughts of Adam Smith, David Ricardo, J. S. Mill, Alfred Marshall, and J. M. Keynes. Prerequisite: 231. FALL. [3] Maneschi.

263. International Trade. International trade in goods and services. Patterns of trade; gains and losses from trade, tariffs, and other commercial policies; economic integration; and international factor movements. Prerequisite: 231. FALL, SPRING. [3] Driskill.

264. Open Economy Macroeconomics. Economics of international monetary, financial, and macroeconomic relationships. Effects of monetary and fiscal politics in open economies, balance of payments, exchange rate determination, and international monetary institutions. Prerequisite: 232. FALL, SPRING. [3] Driskill, D. Weymark.

266. Problems in United States Economic History. (Also listed as History 292) Controversies in historical analysis. Prerequisite: Economics 231. SPRING. [3] Collins.

267. Economics of Poverty and Discrimination. Develops methodologies used to measure the effectiveness of governmental programs aimed at reducing poverty and discrimination, and uses these methodologies to examine the equity and efficiency of current programs. Topics include social security, food stamps, and equal employment opportunity legislation. Prerequisite: 231. FALL. [3] Margo. (Not offered 2000/01)

268. Economics of Health. An examination of some of the economic aspects of the production, distribution, and organization of health care services, such as measuring output, structure of markets, demand for services, supply of services, pricing of services, cost of care, financing mechanisms, and their impact on the relevant markets. Prerequisite: 231. [3] (Not currently offered)

269a–269b. Selected Topics in Economics. Topics of special interest, as announced in the *Schedule of Courses*. [Variable credit: 1–3 each semester]

270. Economics of Sports. The application of economic principles to professional and collegiate team sports. Theory of sports leagues, demand for sports, the market for athletes, racial discrimination, broadcasting rights, antitrust issues. Prerequisite: 150 and 231. SUMMER. [3] Siegfried.

271. Economic History of Europe. (Also listed as History 229) The stages of development of capitalism and modern industry in Europe since the decline of feudalism. The interrelations of government policy, financing institutions, scientific discovery, and the spirit of indi-

vidualism. Prerequisite: 231. Students who wish to study European economic history but do not meet this prerequisite should consider History 181. [3] (Not currently offered)

274. Industrial Organization. The structure of contemporary industry and the forces that have shaped it, including manufacturing, trade, and transportation. The role of the large corporation in modern industrial organization. The relation of industrial structure to economic behavior and performance. Prerequisite: 231. FALL, SPRING. [3] Reinganum.

277. Economic Development and the Environment. The influence of economic development on the environment with special attention to developing countries. Measurement of economic growth. Sustainability of natural resources. Discussion of trade, pollution, forestry and ecotourism, population change, agriculture and land tenure. SPRING. [3] Russell.

278. The Technical Basis for Environmental Policy. (Also listed as Civil Engineering 278 and Management of Technology 278). The engineering and economic foundations of environmental policy formation, mathematical computer modeling of the environment, and economic valuation of environmental quality. Treatment and site clean-up processes, fundamental equations of environmental engineering, the notion of market failure, and economics of monitoring and enforcement. SPRING. [3] Russell, Parker (Civil and Environmental Engineering). (Not currently offered)

279. Urban Economics. Urban growth, development of suburbs, location of firms, housing markets, transportation, property taxes, and local government services. Prerequisite: 231. FALL. [3] Getz.

283. Economics of Natural Resources and the Environment. Economic theory and analytical tools involved in environmental and resource problems: air and water quality and hazardous waste management. Prerequisite: 231. FALL. [3] Russell.

284. Economics of Regulation. The purposes and effects of government regulation. Analysis of natural monopoly, externalities, public goods, and information deficiencies. Case studies usually include electricity, natural gas, airlines, trucking, health and safety, communications, and the environment. Prerequisite: 231. FALL. [3] Klein.

285. Law and Economics. Analysis of the influence of legal rules and institutions on the behavior of individuals and economic efficiency and equity. Applications from civil procedure, contract, tort, and criminal law. Prerequisite: 231. FALL, SPRING. [3] Watts, Daughety.

286. Economics of Human Resources. Human capital theory; economic effect of population trends, fertility, and migration. Additional topics chosen from education, household economics, health, nutrition, demand for children and child care, sex and race discrimination, crime, investment in research and development, the economic value of life and time. Prerequisite: 231 and 150 or consent of instructor. FALL. [3] Staff.

287. European Economic Integration. Policy issues concerning economic integration in Europe, including trade, migration, income distribution, environmental quality, macroeconomic policy, and monetary union. Analysis of European Community institutions. Prerequisite: 231; corequisite: 232. [3] (Not currently offered)

288. Development Economics. Economic change in pre-industrial and newly industrial countries. Emerging capital and labor markets, the role of international trade in economic growth. Market failures and the role of government. Prerequisite: 231. SPRING. [3] Staff.

291a–291b. Independent Study in Economics. A program of independent reading in economics, arranged in consultation with an adviser. Limited to students having written permission from an instructor and the director of undergraduate studies. FALL, SPRING. [Variable credit: 1–3 each semester, or 1–6 for honors candidates; not to exceed 12 overall for honors candidates or 6 overall for other students] Staff.

292a–292b. Senior Thesis. Limited to and required of all candidates for honors. FALL, SPRING. [Variable credit: 1–3 each semester] Staff.

295a–295b. Honors Seminar. Discussion of selected topics and senior thesis research. Open only to seniors in the honors program. [1–1] Siegfried.

300. Selected Topics in Mathematics for Economists. [3]

301. Microeconomic Theory. [3]

302. Macroeconomic Theory. [3]

304a–304b. Microeconomic Theory. [3–3]

305a–305b. Macroeconomic Theory. [3–3]

306. Statistical Analysis. (M.A. Level) [3]

307. Statistical Analysis. [3]

308. Econometrics. (M.A. Level) [3]

309. Econometrics. [3]

312a–312b. Health Economics. [3–3]

316. International Trade Theory. [3]

317. International Monetary Economics. [3]

320a–320b. Seminar in Organization and Control of Industry. [3–3]

329a–329b. Labor Economics. [3–3]

331. Seminar in Economic Analysis. [3]

332. Theory of Money and Finance. [3]

349a–349b. Reading Course. [Variable credit: 1–3 each semester]

350a–b. Independent Study in Research. [3]

353. Project Evaluation. [3]

354a. Public Finance Theory. [3]

354b. Public Finance Seminar. [3]

355a–b. Seminar in Research on Economic Development. [3]

357. International Trade and Economic Development. [3]

358a–358b. Policy Issues in Developing Economies. [3–3]

360. Agricultural and Economic Development. [3]

364. Economic Fluctuations and Stabilization Policy. [3]

366. Development of the American Economy. [3]

370. Econometric Theory. [3]

371. An Introduction to Economic History. [3]

373. Time Series Econometrics. [3]

376. Topics in Advanced Mathematical Economics. [3]

379. Seminar in Urban Economics. [3]

383. Advanced Economics of Natural Resources and the Environment. [3]

388. Economic Development: Macroeconomic Aspects. [3]

389. Economic Development: Microeconomic Aspects. [3]

398. Workshop on Economics. [3]

Business Administration

No more than 30 hours in business administration may be counted toward the 120 hours presented for graduation.

Economics 100 and 101 are prerequisites for all courses in business administration except business administration 140.

140. Accounting. A survey of financial accounting. FALL, SPRING. [3] Böer.

230. Operations Management. Resource allocation decisions where profit, cost, or service criteria are explicitly stated; the effect of alternative output designs on the human and technical resources used in the system; the planning and control of costs, information flows, and material flows; the evaluation of system performance. FALL. [3] LeBlanc.

240. Corporate Finance. (Also listed as Finance Economics 240) Investment and financial decisions faced by firms. Theoretical basis of corporate decision-making. Review of various accounting documents and the alternative objectives of the firm, its management, and its owners. Study of the attributes of the firm which affect market value. How the firm's decisions about investing in assets and methods used to finance these investments affect firm value. Prerequisite: 140 and Economics 150. FALL, SPRING. [3] Damon, Rousseau.

245. History of American Enterprise. (Also listed as Economics 245) Evolution of the form, organization, and structure of the American business firm from colonial times to the present. The role of entrepreneurs, labor management, financial capital, distribution, invention, and government regulation. SPRING. [3] Atack.

247. Human Behavior in Organizations. (Also listed as Sociology 247) Examines organizations as resources in the production and distribution of goods and services. Case analyses from the economy are reviewed to diagnose "organizational pathologies" and reciprocal impacts among organizational structures, leaders, and citizens. SPRING. [3] Cornfield (Sociology).

248. Human Resources in Work Organizations. Individual motivation and behavior, development of skills, organization of tasks, performance in making decisions by groups, organizational power and political behavior, and the design of organizational systems to enhance the productivity of human resources. FALL, SPRING. [3] Staff.

249a–249b. Selected Topics in Business Administration. Topics to be announced. May be repeated more than once if there is no duplication of topic. [Variable credit: 1–3 each semester]

250. Principles of Marketing. Analysis of marketing functions, activities, and institutions. Characteristics of markets, buying habits and motives, brand policies, channels of distribution, price determination, sales programs, and government regulations. Case studies and readings. No credit for graduate students. FALL, SPRING. [3] Staff.

252. Managerial Accounting. A survey of topics in managerial accounting. Designed for the student of general business administration rather than the student interested in professional accounting. Prerequisite: Financial Economics 140. No credit for graduate students. FALL, SPRING. [3] Böer.

255. Marketing Management. Seminar: analysis and discussion of cases and outside readings on merchandising, advertising, and sales management, distribution channels, pricing, and marketing research. Prerequisite: Business Administration 250. No credit for graduate students. [3] (Not currently offered)

258. Legal Aspects of Business Management. The legal framework of business partnerships and corporations; internal partnership management, partners as agents and princi-

pals, and partnership dissolution; powers of corporate shareholders; corporate torts and crimes; and powers and duties of corporate management. No credit for graduate students in economics or management. FALL, SPRING. [3]

259a–259b. Special Topics in Business Administration. Topics of special interest as announced in the *Schedule of Courses*. No credit for graduate students. [Variable credit: 1–3 each semester]

261. Investment Analysis. (Also listed as Financial Economics 261) [3]

275. Financial Management. (Also listed as Financial Economics 275) Analysis of cases representing capital budgeting, forecasting cash flow, risk assessment, capital structure, mergers and acquisitions. Seminar. Prerequisite: 240. SPRING. [3] Damon.

278. Introduction to Operations Research. Optimization and decision-making by firms, using linear and nonlinear modeling under certainty and uncertainty. Emphasizes sensitivity analysis and interactive decision-making (game theory). Prerequisite: Economics 150 and 231. No credit for graduate students. SPRING. [3] Daughety. (Not currently offered)

290a–290b. Independent Study in Business Administration. A program of independent reading in business administration arranged in consultation with an adviser. Prerequisite: written permission of an instructor and the director of undergraduate studies. No credit for graduate students. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed 6 overall] Staff.

Financial Economics

140. Accounting. (Also listed as Business Administration 200) A survey of financial accounting. FALL, SPRING. [3] Böer.

220. Managerial Accounting. (Also listed as Business Administration 252) A survey of topics in managerial accounting. Designed for the student of general business administration rather than the student interested in professional accounting. Prerequisite: 140. No credit for graduate students. FALL, SPRING. [3] Böer.

240. Corporate Finance. (Also listed as Business Administration 240) Investment and financial decisions faced by firms. Theoretical basis of corporate decision-making. Review of various accounting documents and the alternative objectives of the firm, its management, and its owners. Study of the attributes of the firm which affect market value. How the firm's decisions about investing in assets and methods used to finance these investments affect firm value. Prerequisite: 140 and Economics 150. FALL, SPRING. [3]

259a–259b. Special Topics in Financial Economics. Topics as announced in the *Schedule of Courses*. FALL, SPRING. [3] Staff.

261. Investment Analysis. Investment principles and practices. Emphasis on security analysis to develop techniques and standards of investment appraisal. Principles of portfolio analysis. The forecasting problem in meeting portfolio needs of individuals and institutions. Special studies to develop capacity for investigating and reporting. Prerequisite: Economics 150 and 240. FALL. [3]

275. Financial Management. (Also listed as Business Administration 275) Analysis of cases representing capital budgeting, forecasting cash flow, risk assessment, capital structure, mergers and acquisitions. Seminar. Prerequisite: 240. SPRING. [3] Damon.

291a–b. Independent Study in Financial Economics. A program of independent readings in financial economics arranged in consultation with an adviser. Prerequisite: Written permission of an instructor and the director of undergraduate studies. No credit for graduate students. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed 6 overall] Staff.

Economics and History

The interdisciplinary concentration in Economics and History makes an important contribution to liberal education at Vanderbilt by helping students understand the origins and organization of modern society. It also provides a unique preparation for careers in business, the professions, and other fields by combining all the analytical tools of the regular Economics major with History's emphasis on clear and effective writing and on developing skills in gathering, assessing, and synthesizing information. The program consists of 45 hours of course work: 9 hours in an economic history core, and an additional 18 hours in economics and 18 in history.

Note: All students must have at least one semester of calculus; two are strongly recommended. Calculus is a prerequisite for ECON 150, 231, and 232, which are required for the major. It is also a prerequisite for all Economics courses numbered above 250.

Course work for the major is distributed as follows:

ECONOMIC HISTORY CORE (9 hours)

Three of the following courses, one of which must be an economics course numbered above 250:

HIST 172 Economic History of Medieval and Early Modern Europe (new); ECON 226 (HIST 290), 245 (HIST 291), 266 (HIST 292), 271 (HIST 229). Note: ECON 231 is a prerequisite for ECON 266 and 271.

ECONOMICS (18 hours)

ECON 100, 101, 150 (or both MATH 218 and 219), 231, 232; one economics course numbered above 250 not included in the economic history core.

HISTORY (18 hours)

Two of the following: 100, 101, 154, 155, 157, 160, 161, 170, 171; HIST 295 Undergraduate Seminar in History; three electives numbered above 171 not included in the economic history core.

HONORS PROGRAM (9 more hours)

54 hours: students will take the 4-course honors sequence, HIST 297, 298a–b, 299; they will not be required to take HIST 295, though may enroll for 295 as an elective. They will write an interdisciplinary thesis under the direction of an adviser from each department.

Engineering

I THE following course in the School of Engineering may be taken for regular credit in the College of Arts and Science.

Biomedical Engineering 251–252. Systems Physiology. An introduction to quantitative physiology from the engineering point of view. Descriptive physiology of several organ systems (heart, lung, kidney, nerve, blood). Mathematical modeling and computer simulation of organ systems and physiologic control mechanisms. Prerequisite: Biology 100, Biological Sciences 110a–b, or Molecular Biology 102a; and Math 198 or equivalent. [3–3]

English

CHAIR Jerome Christensen

DIRECTOR OF UNDERGRADUATE STUDIES Lynn E. Enterline

DIRECTOR OF GRADUATE STUDIES Michael Kreyling

DIRECTOR OF EXPOSITORY WRITING Mark A. Wollaeger

PROFESSORS EMERITI Emerson Brown Jr., Ann Jennalie Cook, Leonard Nathanson

PROFESSORS Vereen M. Bell, Jerome Christensen, Jay Clayton, Thadious M. Davis,

Paul Elledge, Sam B. Girgus, Roy K. Gottfried, John Halperin, R. Chris Hassel Jr.,

Mark Jarman, Michael Kreyling, Leah S. Marcus, John F. Plummer III, Walter L. Sullivan,

Cecelia Tichi, Nancy A. Walker, Harold Lerow Weatherby Jr.

ASSOCIATE PROFESSORS Carol Burke, Kate Daniels, Carolyn Dever, Lynn E. Enterline,

Teresa A. Goddu, Mark Schoenfield, Mark A. Wollaeger

VISITING ASSOCIATE PROFESSOR Denis Flannery

ASSISTANT PROFESSORS Tina Chen, Tony Earley, Sean X. Goudie, Dennis D. Kezar Jr.,

Deak Nabers, Kathryn Schwarz, Sheila Smith McKoy, June Spence

I BY offering three distinctive programs, the Department of English allows individual students, in consultation with faculty advisers, to personalize their studies while still acquiring the breadth of knowledge and skills of the traditional English major. The curriculum provides extensive courses in the history of British and American literature, in Anglophone literatures from other countries, in literary theory, and in expository as well as creative writing. These diverse courses reflect the interests of students and faculty and the ever-widening area of English literary study.

Students use the concentration in English as a foundation for a variety of careers where the analytic, reading, and writing skills gained in the major are especially valued; as background for advanced training in professional schools (law, medicine, journalism, and business, for example); and for post-graduate work in literature. But the department also regards its goals as helping students become readers of literature and culture throughout their lives.

The Vanderbilt in England program at the University of Leeds, the Humanities in London program, and other overseas programs offer opportunities for

study and travel that enrich a student's education. The Gertrude Vanderbilt and Harold S. Vanderbilt Visiting Writers series annually sponsors public lectures, readings, and other occasions where English majors hear and meet celebrated poets, novelists, and critics. Many majors write for and serve on the editorial boards of various campus publications including *The Hustler*, a biweekly newspaper; *Versus*, a monthly magazine; and *The Vanderbilt Review*, a distinguished collection of creative writing.

Program of Concentration in English and American Literature

Program I: Literary Studies (30 hours)

Students pursue a broad range of interests through a flexible approach to the study of literature. 30 total hours including:

1. 112W or 118W is required and is prerequisite to upper-division courses.
2. 9 hours in literature before 1800 and 3 hours in Ethnic or non-Western literature.
3. 15 additional hours of electives in English, chosen from the courses that count toward the major, as described under General Requirements and Advice.

Program II: Creative Writing (30 hours)

Students concentrate on developing their creative writing abilities while acquiring an overview of English literature. 30 total hours including:

1. 112W or 118W is required and is prerequisite to upper-division courses.
2. 12 hours of creative writing courses from at least two different genres: 200, 201, 204, 205, 206, 207. Admission to these courses is by the consent of the instructor.
3. 9 hours in literature before 1800 and 3 hours in Ethnic or non-Western literature.
4. 3 additional hours of electives in English, chosen from the courses that count toward the major, as described under General Requirements and Advice.

Program III: Specialized Critical Studies (36 hours)

Students design their own specialized course of study with a descriptive name and develop a contract of courses for it. 36 total hours including:

1. 112W or 118W is required and is prerequisite to upper-division courses.
2. Eighteen hours of course work concentrated in a particular period (e.g., 19th-century American or the Enlightenment), genre or movement (e.g., the novel, romanticism), an aspect of intellectual history (e.g., law and literature, literary theory) or other area of special interest. Up to 9 hours may be taken in courses from other departments relevant to the selected concentration. Specific courses are selected and contracted for, in writing, at the time of the declaration of the major in consultation with the student's adviser, who can make available samples of previous contracts as well as discuss appropriate courses in other departments.
3. 9 hours in literature before 1800 and 3 hours in Ethnic or non-West-

ern literature. All of these courses may count towards the requirement of #2, above.

General Requirements and Advice for majors in all programs:

Students should take English 112W, "Introduction to Poetry" or English 118W, "Literary and Cultural Analysis" during the freshman or sophomore year. The survey courses, 208a–208b and 211, are recommended for sophomores to provide a background for advanced courses. Students considering Program II (Creative Writing) may wish to take 122 or 123 as preparation during their freshman or sophomore year.

The courses that fulfill the Early period requirement (literature before 1800) include 208a, 209a–209b, 210, 220, 221, 230, 239, 240, 248, 249, 250, 251, 252a, 252b, 272e, 273e, 274e, 288e, 289 (as appropriate), 295e, and 296a.

Courses that meet the Ethnic and non-Western requirement include 263, 271, 275, 276, 277, 278 as well as selected sections of 272, 273, 274, 288, and 289. In addition, other courses may occasionally fulfill this requirement; these will be announced in the *Schedule of Courses* and on the department Web site.

With the exception of 112W and 118W, 100-level courses do not count toward the major. All 200-level courses (except 290b) count towards the major. English 272, 273, 274, 288, and 295 may be repeated for credit when the topics are different. One course from another department, appropriate to the student's course of study, may be counted towards the requirements of any program with permission of the Director of Undergraduate Studies; for Program III, this course may be in addition to the 9 hours already allowed in other departments.

Juniors and seniors choosing to complete their majors under earlier guidelines should use the 1998/99 catalog. Please consult the *Schedule of Courses* or departmental Web site for sections of 272, 273, 274, 288, and 295 that fulfill specific area requirements.

Detailed descriptions of courses may be accessed from the Department of English Web site and are also available in the department.

Majors are strongly urged to consult their advisers during registration.

Honors Program

To graduate with Honors in English, students must (a) complete all the requirements of the English major, with at least 6 hours in honors sections (if appropriate for a particular honors thesis, a graduate seminar or a seminar in a study-abroad program may be substituted for one honors seminar); (b) 3 hours of 290a; (c) maintain at least a 3.0 grade point average overall and 3.3 in the major; (d) be admitted to the honors program in the spring of the junior year; (e) write a thesis (290b) and pass an oral examination about its subject in the spring of the senior year. Exceptional achievement on the thesis will earn High Honors. Majors who wish to apply to the Honors Program must be within 6 hours of completing all CPLE requirements and must have at least a 3.0 grade point average overall and 3.3 in the major; applications are

accepted in March of the junior year. Additional information is available from the Director of Undergraduate Studies.

Students need not be enrolled in the Honors Program to take honors sections. Honors sections are seminars limited to fifteen students and are open to any student beyond the freshman year who has completed the College writing requirement and who has earned at least a 3.2 grade point average or has been recommended by two members of the Department of English.

The English Minor

At least 18 hours of courses in English are required. These courses must include 3 hours from literature before 1800 and 3 hours of Ethnic or non-Western literature. Students may count 112W, 118W, and all 200-level courses toward the minor.

Licensure for Teaching

Candidates for teacher licensure in English at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

100W. Composition. For students who need to improve their writing. Emphasis on writing skills, with some analysis of modern nonfiction writing. FALL, SPRING. [3] Staff.

104W. Prose Fiction: Forms and Techniques. Close study of short stories and novels and written explication of these forms. FALL, SPRING. [3] Staff.

105W. Drama: Forms and Techniques. Close study of representative plays of the major periods and of the main formal categories (tragedy, comedy) and written explication of these forms. FALL, SPRING. [3] Staff.

106W. Introduction to Literary Criticism. Discussion and application of modes of critical inquiry to a variety of literary works. Not a history of criticism but a study of selected critical approaches. FALL, SPRING. [3] Staff.

109W. Literature: Forms and Techniques. Close analysis and written explication of fiction, drama, and poetry. FALL, SPRING. [3] Staff.

112W. Introduction to Poetry. Close study and criticism of representative poems. The nature of poetry and the process of literary explication. FALL, SPRING. [3] Staff.

115W. Freshman Seminar. [3]

118W. Introduction to Literary and Cultural Analysis. Analysis of a range of texts in social, political, and aesthetic contexts. Interdisciplinary study of cultural forms as diverse as poetry, advertisement, and film. FALL, SPRING. [3] Staff.

120W. Intermediate Composition. A writing course including the analysis of essays from a variety of disciplines. FALL, SPRING. [3] Staff.

122. Beginning Fiction Workshop. Introduction to the art of writing prose fiction. FALL, SPRING. [3] Earley.

123. Beginning Poetry Workshop. Introduction to the art of writing poetry. FALL, SPRING. [3] Daniels, Jarman.

125. Introduction to Film Studies. (Also listed as Film Studies 125) Introduction to the study of film, stylistic tendencies and narrative strategies, genres, and theoretical

approaches. Spans silent and sound eras. Examples from both the Hollywood motion picture industry and diverse national cinemas. FALL. [3] Nabers.

200. Advanced Composition. For the good writer who wants to experiment in a number of advanced techniques. Emphasis on student writing, with analysis of the essay as a literary form and discussion of rhetorical strategies and theories of language and of style. Admission by consent of instructor. [3] (Not currently offered)

201. Nonfiction Writing. Intermediate to advanced instruction in writing personal essays. Supplementary readings that illustrate traditional aspects of the personal essay. Admission by consent of instructor only. May be repeated once for credit. FALL, SPRING. [3] Staff.

204. Intermediate Fiction Workshop. Instruction in fiction writing. Supplementary readings that illustrate traditional aspects of prose fiction. Admission by consent of instructor. May be repeated once for credit. FALL, SPRING. [3] Earley, Sullivan.

205. Advanced Fiction Workshop. Continuing instruction in fiction writing. Admission by consent of instructor. May be repeated once for credit. FALL, SPRING. [3] Staff.

206. Intermediate Poetry Workshop. Instruction in poetry writing. Supplementary readings illustrating traditional aspects of poetry. Admission by consent of instructor. May be repeated once for credit. FALL. [3] Jarman.

207. Advanced Poetry Workshop. Continuing instruction in poetry writing. Admission by consent of instructor. May be repeated once for credit. SPRING. [3] Daniels.

208a–208b. Representative British Writers. Selections from British literature with attention to contexts and literary periods. 208a: from the beginnings to 1660. 208b: from 1660 to the present. Provides a broad background for more specialized courses and is especially useful for students considering advanced studies in literature. FALL, SPRING. [3–3] Gottfried, Marcus, Plummer, Schoenfeld.

Students may not take both 209 and 210 for credit.

209a–209b. Shakespeare. About twenty of the major plays considered in chronological order over two terms, with emphasis on Shakespeare's development as a dramatic artist. 209a is prerequisite to 209b. FALL–SPRING. [3–3] (Offered 2001/02)

210. Shakespeare: Representative Selections. A representative selection of plays, including histories, tragedies, comedies, and romances, designed to give the student a sense of the full range of Shakespeare's work in one semester. FALL, SPRING. [3] Kezar, Marcus, Schwarz.

211. Representative American Writers. Selections from the entire body of American literature with attention to contexts and literary periods. Provides a broad background for more specialized courses and is especially useful for students considering advanced studies in literature. No credit for students who have completed 160. FALL, SPRING. [3] Tichi, Walker.

212. Southern Literature. (Also listed as American and Southern Studies 212) The works of Southern writers from Captain Smith to the present. Topics such as the Plantation Myth, slavery and civil war, Agrarianism, and "post-southernism." Authors may include Poe, Twain, Cable, Faulkner, Welty, Percy, Wright. FALL. [3] Kreyling.

215. Travel, Adventure, and Discovery in Western Literature. (Also listed as Comparative Literature and Humanities 215) The significance and uses of imaginary travel in the Western literary tradition, from the *Odyssey* to the present, with emphasis on the Enlightenment. Topics include scientific discovery, colonialism, and gender. [3] (Not currently offered)

218. Words and Music. (Also listed as MUSL 218) An investigation of works of literature that have inspired musical settings and the musical settings themselves. Emphasis on literary and musical analysis and interpretation. No musical background assumed. [3] (Not currently offered)

- 220. Chaucer.** Study of *The Canterbury Tales* and Chaucer's world. FALL. [3] Plummer.
- 221. Medieval Literature.** The drama, lyrics, romance, allegory, and satire of the fourteenth and fifteenth centuries, studied in the context of the period's intellectual climate and social change. [3] (Offered 2001/02)
- 224. Dante's Divine Comedy.** (Also listed as Humanities 224 and Italian 224) Reading and analysis of the complete *Inferno* and a study of selected cantos from the *Purgatorio* and *Paradiso*, all in English translation. [3] (Not currently offered)
- 230. The Eighteenth-Century English Novel.** The English novel from its beginning through Jane Austen. Development of the novel as a literary form, and study of selected works of Defoe, Richardson, Fielding, Sterne, and other novelists of the period. FALL. [3] Staff.
- 231. The Nineteenth-Century English Novel.** The study of selected novels of Dickens, Thackeray, Emily Brontë, George Eliot, George Meredith, Thomas Hardy, and other major novelists of the period. FALL. [3] Dever.
- 232a–232b. Twentieth-Century American Novel.** Explorations of themes, forms, and social cultural issues shaping the works of American novelists. Authors may include Fitzgerald, Faulkner, Hemingway, Hurston, Ellison, McCarthy, Bellow, Kingston, Morrison, Pynchon. 232a: emphasizes writers before 1945; 232b emphasizes writers after 1945. FALL, SPRING. [3–3] Clayton, Flannery.
- 233. The Modern British Novel.** The British novel from the beginning of the twentieth century to the present. Conrad, Joyce, Lawrence, Virginia Woolf, Forster, and other novelists varying at the discretion of instructor. FALL. [3] Bell.
- 235. Contemporary British Fiction.** The novel and the short story in Great Britain since World War II. [3] (Not currently offered)
- 240. The History of the English Language.** The development of English syntax. History of the English vocabulary: word formation, borrowing, semantic change, and meter. [3] (Not currently offered)
- 244. Critical Theory.** Major theoretical approaches that have shaped critical discourse, the practices of reading, and the relation of literature and culture. [3] (Not currently offered)
- 246. Feminist Theory.** (Also listed as Women's Studies 246) An introduction to feminist theory. Topics include crosscultural gender identities; the development of "masculinity" and "femininity"; racial, ethnic, class, and national differences; sexual orientations; the function of ideology; strategies of resistance; visual and textual representations; the nature of power. SPRING. [3] Dever.
- 248. Sixteenth Century.** Prose and poetry of the sixteenth century. Emphasis on Spenser and his contemporaries. [3] (Not currently offered)
- 249. Seventeenth Century Literature.** Poetry and prose from 1600 to the English Civil War, such as Metaphysical and Cavalier poetry, essays, romances, and satires. Authors may include Bacon, Cavendish, Donne, Herbert, Jonson, Lanier, Marvell, and Wroth. [3] (Not currently offered)
- 250. English Renaissance: The Drama.** English drama, exclusive of Shakespeare, from 1550–1642: Marlowe, Jonson, Webster, and others. SPRING. [3] Schwarz.
- 251. Milton.** The early English poems; *Paradise Lost*, *Paradise Regained*, and *Samson Agonistes*; the major prose. SPRING. [3] Kezar.
- 252a–252b. Restoration and the Eighteenth Century.** Explorations of the aesthetic and social world of letters from the English Civil War to the French Revolution. Drama, poetry, and prose, including Restoration plays, political poetry, satire, travel narratives, and tales.

Authors may include Behn, Dryden, Congreve, Addison, Swift, Finch, Pope, Fielding, Burney, Johnson, and Inchbald. 252a: earlier writers; 252b: later writers. SPRING. [3–3] Staff.

254a–254b. The Romantic Period. Prose and poetry of the Wordsworths, the Shelleys, Byron, Keats, and others. FALL. [3–3] Christensen.

255. The Victorian Period. Works of Tennyson, Browning, Arnold, Hardy, and others. SPRING. [3] Weatherby.

256. Modern British and American Poetry: Yeats to Auden. A course in the interpretation and criticism of selected modern masters of poetry, British and American, with the emphasis on poetry as an art. Poets selected may vary at discretion of instructor. [3] (Offered 2001/02)

258. Contemporary British and American Poetry: Auden and After. Poetry in English from the 1930s to the present. Poets studied vary at discretion of instructor. SPRING. [3] Jarman.

260. Nineteenth-Century American Women Writers. (Also listed as American Studies 260 and Women's Studies 260) Themes and forms of American women's prose and poetry, with the emphasis on alternative visions of the frontier, progress, class, race, and self-definition. Authors include Child, Kirkland, Fern, Jacobs, Harper, Dickinson, and Chopin. [3] (Not currently offered)

261. Forms of Autobiography. Selected texts of autobiographical discourse from St. Augustine through the modern period. [3] (Not currently offered)

262. Literature and Law. Study of the relationship between the discourses of law and literature. Focus on such topics as legal narratives, metaphor in the courts, representations of justice on the social stage. [3] (Offered 2001/02)

263. African American Literature. (Also listed as American Studies 263 and African American Studies 263) Examination of the literature produced by African Americans. May include literary movements, vernacular traditions, social discourses, material culture, and critical theories. [3] (Offered 2001/02)

264. Modern Irish Literature. Major works from the Irish literary revival to the present, with special attention to the works of Yeats, Synge, Joyce, O'Casey, and Beckett. FALL. [3] Gottfried.

265. Film and Modernism. Film in the context of the major themes of literary modernism: the divided self, language and realism, nihilism and belief, and spatialization of time. [3] (Not currently offered)

266. Nineteenth-Century American Literature. Explorations of themes, forms, and social and cultural issues shaping the works of American writers. Authors may include Cooper, Poe, Hawthorne, Douglass, Jacobs, Stowe, Melville, Dickinson, Alcott, Whitman, and Twain. SPRING. [3] Goudie, Nabers.

267. Desire in America: Literature, Cinema, and History. (Also listed as American Studies 267) The influence of desire and repression in shaping American culture and character from the mid-nineteenth century to the present. [3] (Offered 2001/02)

268a. America on Film: Art and Ideology. (Also listed as American Studies 268a) American culture and character through film, film theory, and literature. FALL. [3] Girgus.

268b. America on Film: Performance and Culture. (Also listed as American Studies 268b) Film performance in the construction of identity and gender, social meaning and narrative, public image and influence in America. SPRING. [3] Girgus.

269. Special Topics in Film. Theory and practice of cinema as an aesthetic and cultural form. [3] (Not currently offered)

270. Reading Film. The rhetoric of narrative film, in light of both technical and cultural issues; its evolution through American film genres from *Birth of a Nation* to the present. [3] (Not currently offered)

271. Caribbean Literature. Caribbean literature from 1902 to the present. Emphasis on writing since 1952, which marks the beginning of West Indian nationalism and the rise of the West Indian novel. FALL. [3] Smith McKoy.

272. Movements in Literature. Studies in intellectual currents that create a group or school of writers within a historical period. SPRING. [3] Wollaeger.

273. Problems in Literature. Studies in common themes, issues, or motifs across several historical periods. FALL, SPRING. [3] Burke, Clayton, Goddu, Goudie, Halperin, Plummer, Schoenfield, Smith McKoy, Tichi.

274. Major Figures in Literature. Studies in the works of one or two writers with attention to the development of a writer's individual canon, the biographical dimension of this work, and critical responses to it. FALL, SPRING. [3] Goddu, Tichi, Weatherby.

275. Ethnic American Literature. Texts and theory relevant to understanding race, culture, and ethnicity in the formation of American culture. The literature of at least three of the following groups: African Americans, Native Americans, Asian Americans, Chicano/Latino Americans, Caribbean Americans, and European Americans. SPRING. [3] Chen.

276. Anglophone African Literature. (Also listed as African American Studies 276) From the Sundiata Epic to the present with emphasis on the novel. Attention to issues of identity, post coloniality, nationalism, race, and ethnicity in both SubSaharan and Mahgrib literatures. Such authors as Achebe, Ngugi, Gordimer, Awoonor, and El Saadaw. [3] (Offered 2001/02)

277. Asian American Literature. (Also listed as American Studies 277) Diversity of Asian American literary production with specific attention to works after 1965. Topics such as gender and sexuality, memory and desire, and diaspora and panethnicity in the context of aesthetics and politics of Asian American experience. SPRING. [3] Chen.

278. Colonial and Post-Colonial Literature. (Also listed as Comparative Literature 278 and Humanities 278) Literature from countries colonized by Europe from eighteenth to twentieth century. Examines implications of colonial encounter and formation of "post-colonial" culture and such issues as language, agency, gender roles, and relation between power and narrative. Such authors as Forster, Coetzee, Okri, Tagore, Chatterjee, Kincaid, Rushdie, Soyinka. [3] (Offered 2001/02)

282. The Bible in Literature. An examination of ways in which the Bible and biblical imagery have functioned in literature and fine arts, in both "high culture" and popular culture, from Old English poems to modern poetry, drama, fiction, cartoons, and political rhetoric. Readings include influential biblical texts and a broad selection of literary texts drawn from all genres and periods of English literature. [3] (Offered 2001/02)

283. Satire. The historical origins, the psychology, and the method of satire. The characteristics of satire as a literary mode in the various genres. Authors include Swift, Orwell, Huxley, Waugh, Pope, Byron, Shaw, and Beckett. [3] (Not currently offered)

284. The Comic Novel. (Also listed as Humanities 284) Novels in the European tradition of humorous writing, including works by Rabelais, Cervantes, Fielding, Dickens, Joyce, and Amis. [3] (Not currently offered)

286a–286b. Twentieth-Century Drama. Topics in twentieth century drama drawn from the American, British, and/or world traditions. Formal structures of dramatic literature studied within contexts of performance, theatrical production, and specific dramatic careers. Authors may include O'Neill, Albee, Hansberry, Hellman, Stoppard, Wilson, and Churchill.

286a emphasizes American drama; 286b emphasizes British and world drama. [3–3] (Offered 2001/02)

287. Love and the Novel. Ways in which novelists examine love and desire and render perspectives on them: Austen, Brontë, Conrad, Hardy, James, Mann, Proust, Trollope, and others. [3] (Not currently offered)

288. Special Topics in English and American Literature. Topics offered vary and are cited each semester in the *Schedule of Courses*. FALL, SPRING. [3] Flannery, Gottfried.

289a–289b. Independent Study. Designed primarily for majors. Projects are arranged with individual professors and must be confirmed with the director of undergraduate studies within two weeks of the beginning of classes: otherwise the student will be dropped from the 289 rolls. FALL, SPRING. [Variable credit: 1–3 each semester. Limit of 6 hours total for English majors] Staff.

290a. Honors Colloquium. Background for writing the Honors thesis. Emphasis on research methods, critical approaches, and the students' own projects. Limited to seniors admitted to the English honors program. FALL. [3] Enterline.

290b. Honors Thesis. Prerequisite: 290a. SPRING. [3] Enterline.

295. Undergraduate Seminar. Advanced reading and writing in a particular area of literature. Normally limited to juniors and seniors with preference given to English majors. [3] (Not currently offered)

296a. Anglo-Saxon Language and Literature. The study of the Old English language, selected historical and literary prose, and one or two short heroic poems. [3] (Not currently offered)

301. Seminar in Middle English Literature. [4]

302. Seminar in Chaucer. [4]

306. Seminar in Sixteenth-Century Literature. [4]

310. Seminar in Shakespeare. [4]

312. Seminar in Seventeenth-Century Literature. [4]

314. Seminar, 1660–1800. [4]

316. Seminar in Romantic Prose and Poetry. [4]

318. Seminar in Victorian Prose and Poetry. [4]

320. Studies in American Literature. [4]

321. Studies in Southern Literature. [4]

325. Seminar in Modern British and American Literature. [4]

330. Seminar in the Enlightenment and Its Literary Connections. [4]

337a. Introduction to Literary Theory. [4]

337b. Special Topics in Literary Theory. [4]

340. Beyond Good and Evil. [4]

350. Special Problems in English and American Literature. [1–4]

355. Special Topics in English and American Literature. [4]

371. Teaching Composition and Literature. [4]

372. Teaching College Composition. [1]

375. Seminar in Rhetoric and Composition. [1]

Environmental Science and Environmental Studies

THE College offers several options for students who are interested in environmental matters. At the level of a degree, there is an environmental track in geology or an individualized interdisciplinary degree may be constructed. A career in environmental work is also possible by obtaining a sound background in a conventional discipline and augmenting that with an environmental science/studies minor.

Students interested in a minor or an individual interdisciplinary major should contact the chair of the environmental science committee, who will assist in locating the most appropriate adviser. Advisers are available in the departments of anthropology, biology, chemistry, economics, and geology.

These minors are directed by David McCauley, Professor of Biology and chair of the College Committee on Environmental Sciences.

Environmental Science Minor

Students may choose an interdisciplinary minor in environmental science. Environmental science is the study of how the Earth's natural environmental processes work, how they have been or can be modified by humans and society, and how such modifications impact on the biosphere, at the levels of individuals through ecosystems. An environmental science minor provides students the opportunity to expand their education to include a coherent program in the scientific aspects of how we interact with and modify the Earth's environment.

Students who want to minor in Environmental Science must take a minimum of five courses chosen from the courses listed below and approved by an adviser. Two must be from the core environmental science list (A), and at least two others must be from either the environmental science (C) or the core environmental science list (A). No more than one 100-level course may be counted toward the minor. Not more than two courses can come from the student's major department, recognizing that such courses cannot be counted simultaneously for both a major and a minor.

Environmental Studies Minor

Students may choose an interdisciplinary minor in environmental studies. Humans and their society necessarily interact with and alter the Earth's natural environment. The environmental studies minor allows the student to examine human interaction with the environment from a variety of points of view.

Students who want to minor in Environmental Studies must take a minimum of five courses chosen from the courses listed below and approved by an adviser. Two courses must come from the core lists (A and B); at least one of these courses must be from the environmental studies core list (B). Two or

more additional courses must come from either the environmental studies list (D) or the core environmental studies list (B). No more than one 100-level course may be counted toward the minor. Not more than two courses can come from the student's major department, recognizing that such courses cannot be counted simultaneously for both a major and a minor.

A.) CORE ENVIRONMENTAL SCIENCE: Anthropology: 207, Energy, Environment, and Culture; 230, Environment and Archaeology. Biology: 235, Marine Biology; 238, Ecology (also listed as Biological Sciences 238). Civil Engineering: 271, Environmental Chemistry. Geology: 100, Environmental Geology; 104, Earth Interactions; 201, Global Change and Global Issues; 257, Hydrogeology; 262, Quaternary Geology. Physics: 108, Atmospheric Physics. Social Science: 230, Introductory Physical Geography.

B.) CORE ENVIRONMENTAL STUDIES: Anthropology: 207, Energy, Environment, and Culture; 230, Environment and Archaeology. Economics: 278 or 283, The Technical Basis for Environmental Policy/Economics of Natural Resources and the Environment. Engineering Science: 157, Technology and the Environment. Honors: 181, Philosophy of Nature. Philosophy: 206, Technology and Human Values. Sociology: 220, Population and Society; 270, Human Ecology and Society.

C.) ENVIRONMENTAL SCIENCE: Anthropology: 272, Human Variation. Biology: 205, Evolution (also listed as Biological Sciences 205); 217, Invertebrate Zoology; 218, Biology of Insects (also listed as Biological Sciences 224); 221, Plants and Society; 224, Spring Flora; 227, Ecological Physiology of Plants; 262, Plant-Animal Interactions (also listed as Biological Sciences 257); 270, Statistical Methods in Biology (also listed as Biological Sciences 270); 274, Plant Evolutionary Biology. Biological Sciences: 224, Biology of Insects; 262, Bimolecular Interactions. Chemistry: 210, Analytical Chemistry I; 211, Analytical Chemistry II; 220a–b, Organic Chemistry. Civil Engineering: 203, Fluid Mechanics; 211 (ME 224), Water and Wastewater Treatment; 212, Hydrology; 260, Solid Waste Management; 272, Microbiology of Water, Wastewater, and Air; 275, Environmental Risk Management; 276, Technical Basis for Environmental Policy; 280, Atmospheric Pollution. Geology: 101, The Dynamic Earth: Introduction to Geological Sciences; 103, Oceanography; 106, Marine and Coastal Environments; 150, Geology and Its Influence on Civilization; 220, Life through Time; 260, Geochemistry; 320, Aqueous Geochemistry (with special approval). Mathematics: 219, Principles of Experimental Design. Molecular Biology: 210, Principles of Genetics (also listed as Biological Sciences 210); 211, Genetics Laboratory (also listed as Biological Sciences 211); 220, Biochemistry I (also listed as Biological Sciences 220); 265, Biochemistry II (also listed as Biological Sciences 265); 273, Molecular Mechanisms of Environmental Toxins (also listed as Biological Sciences 273).

D.) ENVIRONMENTAL STUDIES: Anthropology: 173, Social Behavior of Nonhuman Primates; 233, Culture, Ecology, and International Development; 271, Human Evolution; 272, Human Variation; 273, Primate Evolution. Civil Engineering: 279, Economics and Law of Air and Water Resources. Economics: 277, Economic Development and the Environment; 284, Economics of Regulation. History: 292, Historical Geography of the United States; 295, Undergraduate Seminar: History of Environmentalism. Philosophy: 244, Philosophy and the Natural Sciences; 294, Selected Topics: Environmental Ethics. Science, Technology, and Humanities: 190, The Evolution of Modern Technology (also listed as Engineering Science 190); 205, Risk, Science, and Policy. Social Science: 232, Human Geography; 235, Human Geography of Sub-Saharan Africa.

European Studies

DIRECTOR Joel F. Harrington

PROFESSORS Donna L. Bahry, Vereen M. Bell, James Booth, Barbara C. Bowen, Robert A. Driskill, Paul Elledge, James A. Epstein, Leonard Folgarait, Marc Froment-Meurice, Roy Gottfried, Larry J. Griffin, M. Donald Hancock, Alice C. Harris, Andrea Maneschi, John A. McCarthy, Luigi Monga, Helmut F. Pfanner, Philip D. Rasico, James Lee Ray, Dieter H. O. Sevin, John A. Vasquez, Patricia A. Ward,

FULBRIGHT DISTINGUISHED PROFESSOR Hermann J. Rupieper

ASSOCIATE PROFESSORS Michael D. Bess, Dan M. Church, Robert R. Ehman, Joel F. Harrington, Kassian A. Kovalcheck Jr., David A. Lowe, Robert L. Mode, Ljubica D. Popovich, Matthew Ramsey, Thomas Alan Schwartz, Virginia M. Scott, Helmut Walser Smith, Francis W. Wcislo, Kurt Weyland

ASSISTANT PROFESSORS Katherine Barbieri, Hervé François Allet, Laurie Johnson, Meike G. J. Werner

SENIOR LECTURER Tracy Barrett

THE Center for European Studies offers an interdisciplinary major in modern European studies, designed for students who want to broaden their awareness of the European experience and to prepare for advanced study and international careers.

European studies majors are encouraged to participate in one of the Vanderbilt study programs in Europe and residence in the International House on campus. Special activities of the center include lectures by European scholars and informal faculty-student luncheon seminars.

Program of Concentration in Modern European Studies

The interdisciplinary major consists of 42 hours of course work, to be distributed among various disciplines as indicated below. Emphasis is on political, cultural, economic, and related trends or events since the French Revolution. Students may elect to concentrate on a thematic or comparative topic (such as culture and society during a particular epoch), a regional or subregional topic (such as European integration or the Iberian peninsula), or the culture and society of a particular nation (such as France, Germany, Italy, England, Spain, Portugal, or Russia). Students select a particular focus and specific courses that will fulfill requirements of the major in consultation with the director of the Center for European Studies.

Requirements for the interdisciplinary major in modern European studies include completion of:

1. European Studies 201, European Society and Culture.
2. European Studies 250, Senior Tutorial. Students pursuing honors in modern European studies are required to take European Studies 299a–299b in lieu of European Studies 250. This exception is explained in the paragraph describing the honors program below.
3. Nine hours in European history, to be selected from the following list.

EUROPEAN STUDIES: 260, European Cities.

HISTORY: 100, History of Western Civilization to 1700; 101, History of Western Civilization; 115, Freshman seminar (with appropriate topic); 115W, Freshman seminar (with appropriate topic); 184, Nazi Germany and the Holocaust; 188, History of World War II; 202, Science and Society after the Enlightenment; 204, History of Medicine, 1750 to the Present; 212, Medieval Europe, 300–1000; 213, Medieval Europe, 1000–1300; 214, Europe in the Age of the Renaissance; 215, Europe in the Age of the Reformation, 1500–1648; 216, Europe in the Age of Absolutism, 1648–1789; 218, Europe in the Age of Revolution, 1789–1815; 220, Europe in the Nineteenth Century; 225, Europe from World War I to World War II; 226, Europe Since 1945; 227, Intellectual History of Early Modern Europe; 228, Intellectual History of Modern Europe; 231, Germany in the Twentieth Century; 232, History of Modern Italy; 234, History of France from the Renaissance to the Enlightenment; 235, Modern France; 236, France Since 1870; 237, Russia: Tsardom to Empire; 238, Russia: Old Regime to Revolution; 239, Russia: The U.S.S.R. and Afterward; 240, Medieval and Early Modern England; 241, Culture and Conflict in Modern Britain; 242, England under the Tudors; 243, Britain's Century of Revolution; 245, Victorian Britain; 260, History of Portugal and the Portuguese Empire 1415–1975; 294, Selected Topics (with appropriate topic); 295, Undergraduate Seminar in History (with appropriate topic); 296, Independent Study.

4. Nine hours in other social science fields, to be selected from the following list.

EUROPEAN STUDIES: 240, Topics in European Studies; 260, European Cities.

ECONOMICS: 249a–249b, Selected Topics (with appropriate topic); 262, History of Economic Thought; 263, International Trade; 264, Open Economy Macroeconomics; 271, Economic History of Europe; 287, European Economic Integration; 291a–291b, Independent Study.

POLITICAL SCIENCE: 101, Comparative Politics; 102, International Politics; 103, Introduction to Political Theory; 203, Modern Political Philosophy; 205, Modern Political Ideologies; 206, Foundations of Marxism; 207, Liberalism and Its Critics; 210, West European Politics; 211, The European Union; 212, Politics in Russia and Successor States; 213, Democratization and Political Development; 218, Social Reform and Revolution; 220, Crisis Diplomacy; 221, Causes of War; 225, International Political Economy; 226, International Law and Organization; 227, Political Science, Economics, and Foreign Policy; 231, Contemporary Issues in Europe; 232, Evolution in French Foreign Policy under the Fifth Republic; 284, Contested Harmonies: Music and Political Thought; 287–288, Seminars in Selected Topics (with appropriate topic); 289a–289b, Independent Research.

SOCIOLOGY: 291, Structure of Modern Spanish Society; 294, Seminars in Selected Topics; 299, Independent Research and Writing.

5. Nine hours in the humanities, to be selected from the following list.

COMMUNICATION STUDIES: 294, Rhetoric of Irish Nationalism.

EUROPEAN STUDIES: 225, European Realism; 240, Topics in European Studies; 260, European Cities.

ENGLISH: 115W, Freshman Seminar (with appropriate topic); 221, Medieval Literature; 230, Eighteenth-Century English Novel; 231, Nineteenth-Century English Novel; 233, Modern British Novel; 235, Contemporary British Fiction; 244, Literary Criticism; 248, Sixteenth

Century; 249, Seventeenth Century; 251, Milton; 252, Age of Dryden and Swift; 253, Age of Pope and Johnson; 254, Romantic Period; 255, Victorian Period; 256, Modern British and American Poetry; 264, Modern Irish Literature; 272, Movements in Literature (with appropriate topic); 273, Problems in Literature; 274, Major Figures in Literature; 283, Satire; 289a–289b, Independent Study; 295, Undergraduate Seminar (with appropriate topic).

FINE ARTS: 110–111, History of Western Art; 115, 115W, Freshman Seminar (with appropriate topic); 211, Medieval Art; 212, Northern Renaissance; 216, Tuscan Art; 218, Italian Renaissance Art to 1500; 219, Italian Renaissance Art after 1500; 220, Renaissance-Baroque Architecture; 221, Baroque-Rococo Art; 222, British Art; 230–231, Nineteenth- and Twentieth-Century European Art; 232, Modern Architecture; 272a–272b, Survey of Film History; 289, Independent Research; 294, Selected Topics.

FRENCH: 201, French Composition; 204, French for Business; 207–208, French Civilization; 209, Contemporary France; 210, French Cinema; 214, Advanced Conversational French; 215, La Provence; 216, Summer Study Tour; 218, The Contemporary Press and Media; 220, Introduction to French Literature; 226, Advanced Grammar; 232, French Poetry from Villon to Malherbe; 234, Medieval French Literature; 235, Farce and Comedy; 236, Tragedy and *drame*; 237, The Early Modern Novel; 238, The Twentieth-Century Novel; 240, Rabelais, Montaigne and Their Times; 251, Provence and the French Novel; 253, Literature of the Fantastic; 255, French Feminist Thought: Literary and Critical; 256, Contemporary French Philosophical Thought; 257, Nineteenth-Century Novel and Society; 260, Age of Louis XIV; 261, Enlightenment and Revolution; 262, The Avant-Garde in Modern French Theatre; 265, From Romanticism to Symbolism; 267, Twentieth-Century French Literature; 270, The French Literary Canon; 289, Independent Study; 294, Special Topics in French Literature; 295, Special Topics in French Language and Civilization.

GERMAN: 171–172, German Culture and Civilization; 213–214, Intermediate German Conversation and Composition; 216, Business German; 220, Advanced Grammar; 221–222, Background and Main Currents of German Literature; 235, German Romanticism; 237, Women in Transition; 248, The German Lyric; 262, German Literature of the Middle Ages; 263, The Age of Goethe; 264, Nineteenth-Century Drama; 265, Twentieth-Century Drama; 266, Nineteenth-Century Prose; 267, German Novel of the Twentieth Century; 268, Modern German Short Story; 269, East German Literature; 270, German Film; 280, *Sturm und Drang*; 289a–289b, Independent Readings; 294a–294b, Selected Topics.

HUMANITIES: 215, Travel, Adventure, and Discovery in Western Literature; 224, Dante's *Inferno*; 225, European Realism; 230, Contemporary Literature of Central Europe; 284, The Comic Novel.

ITALIAN: 201, Grammar and Composition; 202, Advanced Italian; 214, Spoken Italian; 215, La Toscana; 216, Summer Study Tour; 220, Introduction to Italian Literature; 230, Italian Civilization; 231, Readings from Dante's *Divina Commedia*; 232, The Literature of the Italian Renaissance; 289, Independent Study.

MUSIC LITERATURE: 115, Freshman Seminar (with appropriate topic); 140, Introduction to Music Literature; 141, Survey of Music Literature; 144, Survey of Orchestral Music; 145, Survey of Choral Music; 183, Music, the Arts, and Ideas; 186, Women and Music; 242, Music of the Middle Ages and Renaissance; 243, Music of the Baroque and Classic Eras; 244, Music of the Romantic and Modern Eras; 247, Opera; 284, Contested Harmonies: Music and Political Thought.

PHILOSOPHY: 211, Medieval Philosophy; 212, Modern Philosophy; 213, Contemporary Philosophy; 220, Immanuel Kant; 224, Existential Philosophy; 228, Nineteenth-Century Phi-

losophy; 231, Philosophy of History; 247, Kierkegaard and Nietzsche; 252, Political and Social Philosophy; 253, Philosophy and Economic Policies; 254, Modern Philosophies of Law; 255, Philosophy and Literary Theory; 258, Contemporary Political Philosophy; 260, Twentieth-Century Continental Philosophy; 289a–289b, Independent Readings; 294a–294b, Selected Topics.

PORTUGUESE: 200, Intermediate Portuguese; 201, Intermediate Composition; 207, Spoken Portuguese; 221, Culture and Civilization of the Portuguese-Speaking World: Portugal; 289, Independent Study; 294, Special Topics in Portuguese Language, Literature, and Civilization.

RELIGIOUS STUDIES: 115, Freshman Seminar; 115W, Freshman Writing Seminar (with appropriate topic); 202, Natural Science and the Religious Life; 214, Modern European Christianity; 215, Formation of the Catholic Tradition; 216, Christianity in the Reformation Era; 228, Judaism and Modernity; 229, The Holocaust: Its Meaning and Implications.

RUSSIAN: 203–204, Second-Year Russian; 213–214, Intermediate Russian Conversation; 220, Advanced Grammar; 221–222, Survey of Russian Literature; 223–224, Composition and Conversation; 238, Women in Russian Society and Culture; 247, Readings in the Russian Press; 257–258, Advanced Composition and Conversation; 289a–289b, Independent Readings; 294a–294b, Selected Topics.

SOCIOLOGY: 291, Structure of Modern Spanish Society.

SPANISH: 201, Intermediate Composition; 202, Spoken Spanish; 206, Spanish for Business and Economics; 207, Advanced Conversation; 208, Contemporary Spanish through Film; 212, Advanced Grammar and Stylistics; 220, Languages of Spain; 221, Spanish Civilization; 226, Film and Cultural Trends; 230, Development of Lyric Poetry; 231, The Origins of Spanish Literature; 232, Literature of the Spanish Golden Age; 233, Modern Spanish Literature; 234, Contemporary Spanish Literature; 237, Contemporary Lyric Poetry; 239, Development of the Novel; 240, The Contemporary Novel; 246, *Don Quixote*; 251, Development of Drama; 252, Contemporary Drama; 260, Development of the Short Story; 289, Independent Study; 294a–294b, Special Topics.

6. One of the following language options:
 - a. 6 hours of course work beyond the intermediate level in one European language;
 - b. course work through the intermediate level in two European languages;
 - c. demonstration of proficiency equivalent to either of the preceding options; or
 - d. participation in one of the Vanderbilt study programs in Europe (students participating in the Vanderbilt-in-England program must complete course work through the intermediate level in one European language, or demonstrate equivalent proficiency).

Independent study and research courses and selected topics courses should have topics appropriate to the student's course of study.

Students majoring in modern European studies are urged to satisfy the 9-hour major requirements in the social sciences and humanities by completing courses in the area of their special interest. The remainder of the 42 hours required for the major may be selected from the preceding course lists or

from among approved courses taken abroad. Normally, no more than 9 hours of work in 100-level courses may be counted toward the major; however, students offering two languages under option (b) above may also count toward the major the intermediate-level courses in one of those languages.

Students seeking a second major may count a maximum of 6 hours of course work to meet requirements in both majors.

Programs of Concentration in French and European Studies, German Studies, Russian and European Studies, Spanish and European Studies, and Spanish, Portuguese, and European Studies

The Center for European Studies also offers joint majors in French and European Studies, German Studies, Russian and European Studies, Spanish and European Studies, and Spanish, Portuguese, and European Studies with the Department of French and Italian, the Department of Germanic and Slavic Languages, and the Department of Spanish and Portuguese, respectively. For requirements, see French and Italian, Germanic and Slavic Languages, and Spanish and Portuguese in this catalog.

Honors Program

The Center for European Studies offers qualified majors the option of completing a portion of their major requirements in an honors program. Students have the opportunity to engage in interdisciplinary reading, consultations with faculty, and research on the central topic or theme of their program of concentration. To be admitted to the program, students must have obtained a minimum grade point average of 3.000 and must submit a short description of their proposed program of study to the European Studies Executive Committee.

Requirements of the honors program are as follows: completion of 12 hours of independent research, including European studies 289a–289b, normally taken in the junior year, and 299a–299b, to be taken in the senior year; completion of a senior thesis in the context of 299a–299b; and completion of an honors comprehensive written and oral examination in the second semester of the senior year.

Information concerning the honors program is available from the director of the Center for European Studies. College regulations governing honors programs may be found in this catalog under Honors Programs, Special Programs for Arts and Science.

Minor in European Studies

The Center for European Studies also offers a minor in Modern European Studies. Students must choose a thematic focus and take 18 hours of approved European-content courses distributed as follows:

1. European Studies 201;

2. a minimum of 3 hours of modern European history;
3. a minimum of 3 hours of relevant work in social science; and
4. a minimum of 3 hours of relevant work in humanities.

Course selection must be approved by the director of the Center for European Studies. Neither independent study nor directed study courses may be used to satisfy requirements of the minor.

European Studies 201. European Society and Culture. An interdisciplinary survey of European society, culture, and politics since 1900. FALL. [3] Staff.

European Studies 225. European Realism. (Also listed as Humanities 225 and Comparative Literature 225) Analysis of representative nineteenth-century novels which gave rise to current theories of realism. Balzac, Dickens, Clarín, Galdós, and Dostoevsky. [3] Staff.

European Studies 231. Contemporary Issues in Europe. (Also listed as Political Science 231) Detailed analysis of the political, economic, and social issues facing Europe's post-Cold War period including regional integration, transitions to democracy, economic transformation, ethnic-national relations, industrial organization, environmental politics. [3] (Not currently offered)

European Studies 240. Topics in European Studies. Topics of special interest on modern European culture or society, as announced in the *Schedule of Courses*. May be repeated for credit when topics vary. FALL, SPRING. [3] Staff.

European Studies 250. Senior Tutorial. Supervised readings, joint discussions, and independent research on a modern European topic to be selected in consultation with the director of the Center for European Studies. Open only to juniors and seniors. FALL, SPRING. [3] Staff.

European Studies 260. European Cities. The history, politics, society, or culture of important European cities. Content varies according to location and disciplinary focus. The course is taught during the May Session in Europe with the cities themselves complementing daily lectures and site visits. Course requirements include preliminary work on campus, a research paper, and one or more examinations. May be repeated for credit in different cities. [3] Staff.

European Studies 289a–289b. Independent Readings and/or Research. Independent readings and/or research on approved topics relating to modern European society and culture. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed a total of 6 in 289a and 289b combined] Staff.

European Studies 299a–299b. Senior Honors Research. Open only to seniors who have been admitted to the European honors program. FALL, SPRING. [3–3] Staff.

Film Studies

DIRECTOR Jerome Christensen

PROFESSORS Vereen M. Bell, John Crispin, Jerome Christensen, Sam Girgus,

Dieter H. O. Sevin

ASSOCIATE PROFESSOR Jon W. Hallquist, Gregg Horowitz, John Sloop

ASSISTANT PROFESSOR Deak Nabers
LECTURER William H. Akers

1 FILM Studies is an interdepartmental program that includes courses in film criticism, film history, screenwriting, and film production.

Minor in Film Studies

The film minor consists of eighteen hours. The requirements are as follows:

1. Introduction to Film Studies (also listed as English 125).
2. One course in film theory: currently, either Philosophy 243 (Philosophy of Film) or Communication Studies 242 (Communication, Culture, and Consciousness).
3. One course in film practice: currently, Theatre 170 (Introduction to Film Making), Theatre 219 (Acting I), Theatre 227 (Screenwriting), or Theatre 230 (Play Direction).

Electives

Students must select three courses from the following list:

English: English 265 (Film and Modernism); English 267 (Desire in America); English 268a (America on Film: Art and Ideology); English 268b (America on Film: Performance and Culture); English 269 (Special Topics in Film)

Fine Arts: Either Fine Arts 272a or 272b

French: French 210 (The French Cinema)

German: German 270 (German Film)

Philosophy: Philosophy 243 (Philosophy of Film)

Spanish Spanish 226 (Film and Recent Cultural Trends in Spain)

Theatre: Theatre 170 (Introduction to Film Making); Theatre 219 (Acting I); Theatre 227 (Screenwriting); Theatre 230 (Play Direction); Theatre 271 (American Film Forms)

Special topics courses and graduate courses that are relevant to this minor may also be counted as electives, subject to the approval of the Chair of the Film Studies Committee.

Film Minors are strongly encouraged to elect a course in Foreign Cinema.

Film Studies 125. Introduction to Film Studies. (Also listed as English 125) Introduction to the study of film, stylistic tendencies and narrative strategies, genres, and theoretical approaches. Spans silent and sound eras. Examples from both the Hollywood motion picture industry and diverse national cinemas. FALL. [3] Nabers.

Film Studies 133. Asia on Film. (Also listed as Religious Studies 133) Cinematic perspectives on Asian religion and culture, Hindu, Buddhist, Taoist, Shinto, and Confucian traditions

in India, Tibet, Vietnam, China, Japan, and U.S. Politics and significance of representation and interpretation. FALL. [3] Arai.

Fine Arts

CHAIR Leonard Folgarait
DIRECTOR OF UNDERGRADUATE STUDIES Vivien Green Fryd
DIRECTOR OF GRADUATE STUDIES Ljubica D. Popovich
PROFESSORS EMERITI Robert A. Baldwin, Thomas B. Brumbaugh,
F. Hamilton Hazlehurst, Milan Mihal
PROFESSORS Michael L. Aurbach, Leonard Folgarait, Marilyn L. Murphy
ASSOCIATE PROFESSORS Donald H. Evans, Vivien Green Fryd, Robert L. Mode,
Ljubica D. Popovich, Barbara Tsakirgis
ASSISTANT PROFESSORS Annabeth Headrick, Amy Helene Kirschke, Tracy Miller
SENIOR LECTURER Susan DeMay

I THE Department of Fine Arts combines studio art and art history. Courses are offered in a variety of media and include wide-ranging perspectives on world art. The historical treatment of major fields from ancient to modern serves to connect the arts and other humanities.

Many of our students use the concentration in Art and Art History as a foundation for a variety of careers where the analytic, reading, and writing skills gained in the major are especially valued; as background for advanced training in professional schools (law, architecture, medicine, journalism, and business, for example); for postgraduate work in studio and art history; and for employment in galleries, museums, commercial design, etc. But the department also regards its goals as helping students to become readers of the visual arts, images, and culture throughout their lives and as encouraging creative approaches to learning.

The Fine Arts Student Association sponsors public lectures, debates, and other programs where majors can engage in lively discussions and meet artists and art historians. This organization sponsors a roundtable discussion of six alumni every fall semester who majored in Fine Arts; they discuss their current careers and how they arrived at them.

Since 1984 the department has supervised the awarding of the Margaret Stonewall Wooldridge Hamblet Award to an eligible senior student for study and creative experience abroad. The Hamblet award provides the means for travel and independent art activity for one year, culminating in a one-person exhibition at the Fine Arts Gallery. Students wanting to participate in the spring competition must be graduating seniors who have taken at least three studio art courses at Vanderbilt prior to the spring semester of their senior year.

The department curriculum shares course work with departments and programs in complementary disciplines, including African American Studies,

American and Southern Studies, East Asian Studies, European Studies, Latin American and Iberian Studies, Women's Studies, Anthropology, and Classical Studies. Fine arts majors share in the activities of an undergraduate student organization and work closely with departmental advisers.

Program of Concentration in Fine Arts

Requirements for the major include completion of 30 hours. Core courses required are 110–111 and either 130 or 200. In addition, five 200-level courses in art history and 6 hours of studio art are required (up to six more hours in studio may be included within the major). The area courses must include the following:

- At least one in each of five categories, consisting of ancient, medieval, renaissance-baroque, modern, non-western, *or*
- At least one in each of four categories, combined with an advanced seminar (above 290) in one of the four categories.

200 may be taken as either a core requirement or an area course. 226 and 272a–272b do not count as area courses. 293 or 294 may be used to meet an area requirement with department approval.

Areas:

A. *Ancient:* 217, 203, 204, 205, 206

B. *Medieval:* 210, 211, 214, 215

C. *Renaissance-Baroque:* 212, 218, 219, 220, 221, 222

D. *Modern:* 230, 231, 232, 234, 240, 241

E. *Non-western:* 200, 245, 252, 253, 254

Honors Program in Fine Arts

The honors program in fine arts allows exceptional undergraduate students to undertake independent research on a topic in art history in consultation with faculty members. The program is open to all fine arts majors with junior standing who meet a 3.0 grade point average in all general University courses and a 3.30 grade point average in fine arts courses. They also must be approved for acceptance into the Honors Program by the departmental faculty. Completion of the program requires 6 hours of study through any combination of hours enrolled in Fine Arts 289: Honors Research, and Fine Arts 299: Honors Thesis, submission of an honors thesis, and successful completion of an oral honors examination. These independent research hours are expected to be in excess of the 30 hours required for the major in Fine Arts. Students meeting these requirements receive Honors or High Honors in Fine Arts, depending on the quality of their thesis, grades in fine arts courses, and examination results. Successful Department Honors students will receive a Vanderbilt diploma that records Honors or High Honors in Fine Arts.

Minor in Art History

Required courses for the minor are two courses from 110, 111, 130 and 200, and any four other fine arts courses numbered above 200, excluding studio courses.

Minor in Studio Art

The minor requires 21 hours of course work, including the following:

102 (Drawing and Composition)

111 and either 110, 130, or 200

Two 100-level (in addition to 102) and two 200-level courses in studio art taken in sequence (a sequence consists of an introductory course in studio art with an advanced course above 200, designated "Advanced Art Studio," in the same medium). In special circumstances, 294 (independent study) may be taken for further advanced work in a medium.

Several considerations are given to students who major in art history and minor in studio:

Two of the art history survey courses (110, 111, 130, or 200) that are taken as requirements for the major can be counted toward the studio minor. A total of seven studio courses (21 hours) are required.

As an option, one independent study course (294) may be taken with a studio professor toward additional advanced work in a medium.

In studio art, independent study hours are only allowed with permission of the instructor with whom the student has previously taken a class.

102. Art Studio: Drawing and Composition. Technical characteristics of a variety of media. Formal, structural, and expressive alternatives. Problems in figure and landscape. FALL, SPRING. [3] Aurbach, Evans, Murphy, Porter.

103. Art Studio: Design and Color. Introduction to the manipulation of plastic elements common to single- and multiple-plane organization, with emphasis on the application of color theory to problems in both two- and three-dimensional media. FALL, SPRING. [3] Aurbach, Evans, Murphy.

107. Art Studio: Printmaking. Introduction to the technical process of a variety of print-making media, including silkscreen and relief, and the application of these techniques to creative expression. Prerequisite: 102. FALL. [3] Murphy.

108. Fundamentals of Photography. A studio course in black-and-white photography. Composition, quality of image, and photographic manipulation. SPRING. [3] Wilkinson.

109. Art Studio: Introduction to Photographic Design. Various photographic processes to develop individual creative expression. Lensless imaging and 35mm techniques. Presentations and discussions of issues that affect contemporary art. FALL. [3] Evans.

110–111. History of Western Art. A survey of art from prehistoric times to the present. 110: ancient and medieval art. 111: Renaissance and modern art. [3–3] Mode, Popovich, and staff.

115, 115W. Freshman Seminar. [3]

130. Images of Culture. (Also listed as Anthropology 130) The anthropology of art. Comparative study of aesthetics and the nature of beauty. Artistic creation and the role of images, myth, and ritual in various cultures. FALL. [3] Headrick.

135. Art Studio: Life Drawing. Intensive study of the expressive potential of the human figure as a subject through direct experience with models. Problems include a variety of figure-environment situations and a variety of graphic media, including some color, as well as some allied work in three-dimensional materials. Prerequisite: 102. FALL. [3] Evans.

143. Art Studio: Multimedia. Relationships of film, video, computer graphics, new materials, electronic music, and dance. Technical processes and creative expression. SPRING. [3] Evans. (Offered 2001/02)

144. Art Studio: Video Art. Video as an art form. Group and individual productions. Viewing and discussion. Project analysis and critique. Relationship to such traditional media as photography and film. SUMMER. [3] Evans.

150. Art Studio: Painting. Technical and conceptual aspects of painting. Individual instruction based on ability and experience. Prerequisite: 102. FALL, SPRING. [3] Evans, Murphy.

160. Art Studio: Sculpture. Changing concepts, materials, and processes in sculpture. Individual instruction based on ability and experience. FALL, SPRING. [3] Aurbach.

161. Art Studio: Assemblage. Additive processes in sculpture. Problems involving found objects, kinetic/time-based ideas, and site-specific installations. SPRING. [3] Aurbach.

165. Art Studio: Ceramics. Introduction to ceramic design and preparation of clay objects. Hand-building, wheel-throwing, ceramic sculpture, surface enrichment, glazing, and kiln-firing. [3-3] DeMay.

200. Asian Art. A survey of sculpture, painting, and architecture in India, China, Japan, Korea, and Southeast Asia. The arts of each country will be studied in light of the historical, religious, philosophical, and cultural background. SPRING. [3] Miller.

202. Advanced Art Studio: Drawing and Composition. Prerequisite: 102. FALL. [3] Evans, Murphy.

203. Aegean Art and Archaeology of the Bronze Age. (Also listed as Classical Studies 203) The art and archaeology of the major cultures around the Aegean Sea between 3000 and 1000 B. C.: Minoan, Helladic or Mycenaean of the Greek mainland, Cycladic and those of Anatolia. FALL. [3] Tsakirgis.

204. Archaic and Classical Greek Art and Architecture, 1000 to 400 B.C. (Also listed as Classical Studies 204) Sculpture, vase painting, architecture, and the minor arts from about 1000 B.C. to the late fifth century B.C. Formal and stylistic developments in relation to changing cultural background. No credit for students who have completed 227. FALL. [3] Tsakirgis.

205. Late Classical Greek and Hellenistic Art and Architecture. (Also listed as Classical Studies 205) Sculpture, vase painting, architecture, and the minor arts from after the Parthenon to the Roman Empire. A focus on those media (wall painting and mosaic) which develop significantly in this period. [3] Tsakirgis. (Offered 2001/02)

206. Roman Art and Architecture. (Also listed as Classical Studies 206) Sculpture, architecture, and painting from the tenth century B.C. to the early fourth century A.D. Daily life of the Romans as seen in the towns of Pompeii and Herculaneum. [3] Tsakirgis. (Offered 2001/02)

207a–207b. Advanced Art Studio: Printmaking. Prerequisite: 107. FALL, SPRING. [3–3] Murphy, Porter.

209. Advanced Art Studio: Photographic Design. Prerequisite: 109. FALL. [3] Evans.

210. Early Christian and Byzantine Art. The development of architecture, sculpture, painting, and the minor arts from the fourth through the fifteenth century. FALL. [3] Popovich.

211. Medieval Art. The development of architecture, sculpture, painting, and the minor arts in Europe from the eighth through the fourteenth century. SPRING. [3] Popovich.

212. Northern Renaissance. Painting, sculpture, and graphic arts in the Low Countries, France, and Germany from the end of the fourteenth century through the Reformation. Historical, social, and religious factors are considered as well as style. [3] (Offered 2001/02)

214. Jewish and Islamic Art and Architecture. Architecture and its decoration, painting, and the minor arts among the Jews from circa 1200 B.C. to the early fifteenth century, and among the Moslems from the seventh through the sixteenth centuries. Emphasis on stylistic and geographic diversity. [3] (Not currently offered)

215. Formation and Power of Christian Images. Iconographic analysis of the origins and evolution of single figures and compositions: their religious and political messages in painting and sculpture of the Middle Ages from circa 300 to 1300. SPRING. [3] Popovich.

217. Art and Architecture of Egypt and the Ancient Near East. (Also listed as Classics 217) A survey of the art and architecture of Egypt from the fourth millennium B.C. through the Old, Middle, and New Kingdoms, and a survey of the art and architecture of the major cultures of the ancient Near East from the fourth millennium to the late sixth century B.C., including the Sumerians, Assyrians, Hittites, and Babylonians. Emphasis on sculpture, wall painting, architecture, and the minor arts. [3] Tsakirgis. (Offered 2001/02)

218. Italian Renaissance Art to 1500. Early development of painting and sculpture through the fourteenth century and into the full Renaissance style of Italian art, as manifest in the works of Giotto, Masaccio, Donatello, and Botticelli. Emphasis is placed on the age of the Medici. FALL. [3] Mode.

219. Italian Renaissance Art after 1500. High Renaissance and Mannerist art in sixteenth-century Italy, considering Florentine masters such as Leonardo, Michelangelo, and Pontormo, the Roman school of Raphael, and the Venetians from Giorgione and Titian to Tintoretto. SPRING. [3] Mode.

220. Renaissance-Baroque Architecture. European architecture from the fifteenth century to the French Revolution with emphasis on its historical and social background. The various architectural movements—Renaissance, Baroque, and Rococo—are studied in terms of important architects and buildings, especially of Italy, France, and England. [3]

221. Baroque-Rococo Art. European painting from 1550 to the French Revolution encompassing the Mannerist, Baroque, and Rococo movements as they are manifest in the works of Caravaggio, Velasquez, Rembrandt, Watteau, Hogarth, and Tiepolo. FALL. [3]

222. British Art. The arts of England and related cultures, from Van Dyck and Hogarth to Blake and the Pre-Raphaelites. Social and political context and literary influence. SPRING. [3] Mode.

230–231. Nineteenth- and Twentieth-Century European Art. A survey of painting and graphic arts, with some consideration given to social and historical factors. 230: from Neo-Classicism through Post-Impressionism; 231: from the early expressionist movements to mid-century. Folgarait. SPRING. [3–3]

232. Modern Architecture. A survey of nineteenth-century styles from Federal to Victorian, and major twentieth-century architects and designers from Wright and the Bauhaus to Eames and Kahn. City planning and preservation. FALL. [3] Folgarait.

234. Twentieth-Century Mexican Literature, Film, and Art. (Also listed as Latin American Studies 234) The historical, social, and political dynamic as expressed in various art forms. The relation between social reality and aesthetic form. [3] (Not currently offered)

235. Advanced Art Studio: Life Drawing. Prerequisite: 135. SPRING. [3] Evans. (Offered 2001/02)

237. History of Spanish Art up to the Seventeenth Century. Includes one class meeting per week in the Prado or the Archaeological Museum. Offered in the Vanderbilt-in-Spain program. FALL. [3] Momplet.

238. History of Spanish Art from the Seventeenth Century to the Present. Relations to European tendencies of the same period, includes one class meeting per week in the Prado Museum. Offered in the Vanderbilt-in-Spain program. SPRING. [3] Momplet.

240. American Art and Architecture to the Civil War. The painting, sculpture, and architecture of the United States from the Colonial period to the Civil War with an emphasis on iconography and social history, focusing on race and gender. FALL. [3] Fryd.

241. Art and Architecture 1865 to 1945. The painting, sculpture, and architecture of the United States between the Civil War and the Second World War with an emphasis on iconography and social history, focusing especially on race and gender. SPRING. [3] Fryd.

242. Art since 1945. A survey of art produced in the United States and Europe since 1945 with an emphasis upon theory and the social and intellectual factors. [3] Fryd. (Offered 2001/02)

243. Advanced Art Studio: Multimedia. Prerequisite: 143. SPRING. [3] Evans. (Offered 2001/02)

245. Art of Pre-Columbian America. (Also listed as Anthropology 245) The great artistic traditions of pre-Columbian America, including the Aztec, Maya, Inca, and native North American. Styles, symbolism, and the role of art in native politics, history, and religion. SPRING. [3] Headrick.

250a–250b. Advanced Art Studio: Painting. For description, see 150. Prerequisite: 150. [3–3] Evans and Murphy.

252. Chinese Art. The major and minor arts from the neolithic period to the Ch'ing Dynasty considered in relation to their religious and cultural backgrounds. FALL. [3] Miller.

253. Japanese Art. The sculpture, painting, architecture, ceramics, and minor arts from the protohistoric period to the present. FALL. [3] Miller.

254. Japanese Painting and Prints. A survey of Japanese painting from the protohistoric period to the present with an emphasis on schools, styles, and development of woodblock prints as seen in their historical, religious, and cultural context. SPRING. [3] Miller.

256. Art of the Maya. (Also listed as Anthropology 256) Architecture, painting, and sculpture from 100 B.C. to artistic traditions of contemporary Maya peoples. Ritual, religion, mythology and politics. SPRING. [3] Headrick.

257. Mesoamerican Art. (Also listed as Anthropology 257) Worldview as expressed by painting, sculpture, and architecture from 2000 B.C. through the sixteenth century. Impact

of religion and politics on the cities of the Olmec, Zapotec, and Aztec as seen through their artistic traditions. FALL. [3] Headrick.

260. Advanced Art Studio: Sculpture. Prerequisite: 160. FALL, SPRING. [3] Aurbach.

265a–265b. Advanced Art Studio: Ceramics. For description, see 165. Prerequisite: 165. 265a, SPRING. [3–3] DeMay.

272a–272b. Survey of Film History. A survey of the development of the motion picture and analysis of its changing aesthetic through the study of acknowledged masterpieces. 272a: the beginnings in 1895 through 1941. 272b: 1941 to the present. 272b, FALL. [3–3] Hinton.

280a-280b. Internship. Under faculty supervision, students gain experience in different settings that provide a broad range of arts-related programs, at public or private institutions, including museums, and/or federal agencies. Students may take 3–6 hours in 280a, which includes background research done prior to or concurrently with a one semester internship program, leading to submission of a research paper at the end of that semester. Normally, 6–9 hours will be taken in 280b, with a report required at the end of the internship training. A 2.90 grade point average and approval of a specific plan by the department is required, plus at least 6 hours of prior work in fine arts. 280a: Internship research: readings and critiqued assignments under faculty supervision. FALL, SPRING. [1–6] FA 280b: Internship training: offered only as Pass/Fail credit, not part of minimum hours for the fine arts major, to be taken concurrently with 280a. FALL, SPRING. [1–9]

289. Independent Research. Supervised work in extension of regular offerings in the curriculum. Registration only with agreement of instructor involved and with written approval of the director of undergraduate studies. FALL, SPRING. [Variable credit: 1–3 per semester, not to exceed a total of 6]

290. Directed Study. [1–3]

293. Senior Seminar. Research and writing in art history. FALL, SPRING. [3] Staff.

294. Selected Topics. May be repeated with change of content up to a total of 9 hours. FALL, SPRING. [3] Staff.

298. Honors Research. Research to be done in consultation with a member of the faculty in Fine Arts. Open only to those beginning honors work in Fine Arts. FALL, SPRING. [Variable credit: 1–6 each semester; may be repeated to a maximum of 6] Fryd.

299. Honors Thesis. Open only to seniors in the departmental honors program. Students completing this course with distinction, including a thesis and final examination, will earn honors in Fine Arts. Prerequisite: 298. FALL, SPRING. [Variable credit; 1-6 each semester; may be repeated to a total of 6] Fryd.

301. The Methods of Art History. FALL. [3] Folgarait.

305. Seminar in Classical Art and Architecture. FALL. [3] Tsakirgis.

312. Seminar: Problems in Medieval Architecture. FALL. [3] Popovich.

315. Seminar: Early Renaissance Art. [3]

319. Seminar: Problems in Baroque Art. [3]

324. Seminar: Studies in Twentieth-Century Art. [3]

325. Seminar: Studies in American Art. [3] Fryd.

355. Seminar: Mesoamerican Art. SPRING. [3] Headrick.

French and Italian

CHAIR Virginia M. Scott

DIRECTOR OF GRADUATE STUDIES Dan M. Church

PROFESSORS EMERITI Larry S. Crist, James S. Patty, Claude Pichois,

Raymond Paul Poggenburg, Morris Wachs

PROFESSORS Barbara C. Bowen, Marc Froment-Meurice, Luigi Monga, Patricia A. Ward

ASSOCIATE PROFESSORS Dan M. Church, William Franke, Virginia M. Scott

VISITING ASSOCIATE PROFESSOR Sahar Amer

ASSISTANT PROFESSORS Hervé François Allet, Aline Baehler, Anthère Nzabatsinda,

Holly A. Tucker

SENIOR LECTURER Tracy Barrett

I THE Department of French and Italian offers a program of concentration in French. Students use courses in both French and Italian to satisfy some requirements of the College Program in Liberal Education. Senior faculty members teach courses at all levels, including certain sections of first- and second-year courses. Other sections are taught by teaching fellows—selected graduate students working under the supervision of department faculty. All literature and civilization courses and most language courses are taught in French or Italian.

Many students participate in the Vanderbilt-in-France or the Vanderbilt-in-Italy program. Activities organized by the department or by the French or Italian Clubs include lectures by visiting professors, films, and symposia. Students and faculty also produce, direct, and act in the annual French play. Students are urged to apply for living space in the French section of McTyeire International House; activities organized there are open to all interested parties.

Program of Concentration in French

Students are required to complete a minimum of 30 hours in courses numbered 201 and above, including 201, 207 or 208 or 209, 214, 220, and 270, three literature courses, and one course in language or civilization. Students placing out of 201 are required to take 226 in its place.

French 220 is prerequisite for all literature courses. A student's selection of literary courses should provide the broadest possible coverage of French literature. Courses are generally divided into those on genres (230–239), authors (240–249), themes (250–259), and literary movements (260–269). French 222 and 225 also count as literature courses for the major. 270 is reserved for seniors who have satisfied the other literature requirements. All majors are expected to consult their advisers about their choice of major courses each semester.

Students are encouraged to consider spending up to one year in the Vanderbilt-in-France program in Aix-en-Provence. They may earn up to 18 hours of direct credit each semester in French and other fields, including political

science, philosophy, and fine arts. Courses in Aix in French literature, language, and civilization count toward the major or minor.

Honors Program in French

In addition to requirements set by the college, the following requirements must be met:

1. 36 hours in French at the 200-level or above, including the requirements for the 30-hour major.
2. One 300-level French course during the senior year; this may substitute for one 200-level course required for the major.
3. A minimum of 1 semester of study (or the summer session) at Vanderbilt-in-France or at an approved substitute program in a French-speaking country.
4. 3.3 grade point average in French.
5. Completion of an honors thesis, under the direction of a faculty adviser.
6. 6 hours of thesis credit under French 299a and 299b (Honors Thesis).
7. An oral examination on the thesis and its area in the last semester of the senior year.

A three-member Honors Committee will administer the program. Students must submit the name of the faculty adviser and the proposed thesis topic to this committee for approval during the second semester of the junior year. The committee will set guidelines for the thesis topic proposal, publish deadlines each year, and administer the oral examination.

Program of Concentration in French and European Studies

Students in French may elect this interdisciplinary major, which requires a minimum of 42 hours of course work. A semester of study at Vanderbilt-in-France is required.

Course work for the major is distributed as follows:

French

French language and literature (12 hours): 201, 214, 220, and 270

French culture, history, and civilization (9 hours)—

three of the following: 207, 208, 209, 215 and 218, History 236

Two other courses in French (6 hours)

Total in French: 27 hours

European Studies

European Studies 201 and 250 (6 hours)

Political Science 287 or 288 in the version offered at Aix (3 hours)

One course selected from the list of social science courses approved for European Studies—economics, political science, sociology (3 hours)

One of the following history courses: 218, 220, 225, 226, 228, 234, 235, 236 (3 hours)

History 236 will also count for 3 hours on the French side of the program; in this case, the student will take an elective from the list of history, social science, or humanities courses approved for European Studies.

Total in European Studies: 15 hours

Minor in French

The minor in French requires 18 hours of course work, including 201, French Composition; 214, Advanced Conversational French; 220, Introduction to French Literature; and three electives from the 200-level courses that count toward the major except 210, 216, and 289. Up to six hours of French 294 or 295 may count toward the minor with prior departmental approval. Students placing out of 201 are required to take 226 in its place. All minors are expected to consult their advisers about their choice of courses. No course in translation may count toward the minor.

Minor in Italian

The minor in Italian requires 18 hours of course work, including 201, Grammar and Composition; 214, Spoken Italian; 220, Introduction to Italian Literature; and three electives from the 200-level courses, except 216 and 289. Students are encouraged to participate in the Vanderbilt-in-Italy program. No course in translation may count toward the minor.

Licensure for Teaching

Candidates for teacher licensure in French at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

French

Students who have not studied French in high school should begin their studies at Vanderbilt in French 101a. Students with high school French on their records must present a College Board achievement test score in French to be placed correctly. Students should consult their advisers or the Department of French and Italian for advice on placement.

101a–101b. Elementary French. Elementary reading, writing, speaking, and listening, with emphasis on practical usage. Introduction to simple literary language. Classes meet five times weekly. Open to students who have studied little or no French before. [5–5] Staff.

102. Intensive Elementary French. An accelerated approach to reading, writing, speaking, and listening. Emphasis on practical usage. Open to students who have no knowledge of French but know another Romance language. No credit for students who have completed French 101a–101b. FALL, SPRING. [5] Staff.

104a–104b. Intermediate French. Review of French grammar, with composition and intensive and extensive readings of French literary texts. Prerequisite: 101b. [3–3] Staff.

105. Intensive Intermediate French. Review of French grammar, with emphasis on reading and literary analysis. Open to students who are placed by the department on the basis of exceptional work in high school or in 101b or 102. Not open to students who have completed 104b. FALL, SPRING. [3] Staff.

114. Intermediate Conversational French. Intensive work in spoken French with emphasis on vocabulary acquisition. Must be preceded or accompanied by 104a. FALL, SPRING. [3] Staff.

201. French Composition. Open to students who have completed 104b or the equivalent. No graduate credit. FALL, SPRING. [3] Baehler, Monga, Nzabatsinda.

203. Phonetics. Methodical comparison of French and English sounds. Correct formation of French sounds; oral exercises and aural training. SPRING. [3] Church.

204. French for Business. Specialized vocabulary of business terms, business letters, and exercises in comprehension and translation. Prerequisite: 201. SPRING. [3] Staff.

207–208. French Civilization. Cultural achievements of France within a historical and geographic context. 207: from the origins to the revolution. 208: nineteenth and twentieth centuries, Napoleon to DeGaulle. 207: FALL, Nashville, Vanderbilt-in-France; 208: SPRING, Nashville. [3–3] Raycraft.

209. Contemporary France. The culture of France today; social, economic, and political issues; literature and the arts. SPRING, Vanderbilt-in-France. [3] Jourlait.

210. The French Cinema. Historical survey of motion picture art in France. No knowledge of French is required, but students who wish the course to count toward the major or minor in French must do their writing in French. SPRING. [3] Church.

214. Advanced Conversational French. Emphasis on idiomatic usage and strategies for oral communication. Prerequisite: 201. FALL, SPRING. [3] Baehler, Porter.

215. La Provence. Geography, history, politics, architecture, and other cultural elements of Provence. Offered regularly, each semester, in the Vanderbilt-in-France program. [3]

216. Summer Study Tour. Concentrates on one of several French provinces other than Provence; preparation, by readings and discussion during the session; field trips of three to four days in each province during the session; papers on one aspect of the province required. Offered each summer in the Vanderbilt-in-France program. SUMMER. [1]

218. The Contemporary Press and Media. Analysis of newspapers and magazines through the comparative study of national and international issues in the press of the French-speaking world. Includes television broadcasts. Prerequisite: 201. Offered at Vanderbilt-in-France. SPRING. [3] Staff.

220. Introduction to French Literature. Fundamental techniques for critical reading of French literature. Prerequisite: 104b or 105. FALL, SPRING. [3] Church, Froment-Meurice, Nzabatsinda, Tucker.

222. Introduction to Francophone Literature. The geopolitical, linguistic, and literary dimensions of the notion “La Francophonie.” Readings will be chosen from fictional and nonfictional works from Africa, Canada, the Caribbean, Indian Ocean, and Vietnam. [3] (Not currently offered)

225. French Methods of Textual Analysis. Introduction to oral *explication de texte*: methods, vocabulary, and theory. Taught in Vanderbilt-in-France. FALL, SPRING. [3] Staff.

- 226. Advanced French Grammar.** A systematic review with particular attention to morphology and syntax. Prerequisite: 201 or its equivalent. FALL. [3] Scott.
- 232. French Poetry from Villon to Malherbe.** French poetry of the fifteenth to seventeenth century, including Villon, Marot, the Ecole Lyonnaise, the Pléiade, d'Aubigné. [3] (Not currently offered)
- 234. Medieval French Literature.** Survey of medieval chronicles, theater, and lyric and didactic poetry, with an introduction to the philology of the language. SPRING. [3] Amer.
- 235. Farce and Comedy.** Evolution of comic theater from the Middle Ages to the present, including satire, social commentary, and pure theater. The relationship of plays to the times in which they are produced. Prerequisite: 220. [3] (Not currently offered)
- 236. Tragedy and *drame*.** Evolution of noncomic theatrical forms in France from the neo-classical tragedy, through the *drame bourgeois*, the romantic melodrama, and the *drame réaliste*, to the attempts to revive tragedy in the twentieth century. [3] (Not currently offered)
- 237. The Early Modern Novel.** Development of the novel as a genre in the seventeenth and eighteenth centuries; its changing social, intellectual, and political context. [3] (Not currently offered)
- 238. The Twentieth-Century Novel.** The novel as a genre in the context of modernity and post modernity. Readings will focus on narrative techniques. [3] (Not currently offered)
- 239. The African Novel.** The postcolonial francophone novel of Maghreb and Subsaharan illustrating issues such as tradition and modernity, the identity of Africa, the representation of women, and the ideology of language. Recommended: 222. SPRING. [3] Nzabatsinda.
- 240. Rabelais, Montaigne, and their Times.** Rabelais and Montaigne in the intellectual context of the sixteenth century: humanism, the Reformation, discovery of the New World. FALL. [3] Bowen.
- 251. Provence and the French Novel.** Images of Provence, its people, and their customs in novels of the nineteenth and twentieth centuries by Dumas, Zola, Giono, Pagnol. Offered every summer in the Vanderbilt-in-France program. [3]
- 253. Literature of the Fantastic.** The theme of the fantastic in nineteenth- and twentieth-century prose fiction. Critical analysis using psychological and psychoanalytic concepts. [3] (Not currently offered)
- 255. French Feminist Thought: Literary and Critical.** (Also listed as Women's Studies 255) Feminist themes in twentieth-century French literature and criticism. Authors include Beauvoir, Duras, Sarraute, Irigary, Cixous. [3] (Not currently offered)
- 256. Contemporary French Philosophical Thought.** Themes and concepts of major twentieth-century philosophers and philosophical movements. Offered at Vanderbilt-in-France. SPRING. [3] Ravoux.
- 257. The Nineteenth-Century Novel and Society.** Conflicts between individual and society in the work of major nineteenth-century writers such as Chateaubriand, Balzac, Sand, Stendhal, Flaubert, and Zola. [3] (Not currently offered)
- 260. Enlightenment and Revolution.** Major writers of the eighteenth century, including Montesquieu, Voltaire, Rousseau, Diderot; literature of the Revolution. [3] (Not currently offered)
- 261. Age of Louis XIV.** Literature and society in the reign of Louis XIV. Authors include Mme de Lafayette, La Fontaine, Molière, Pascal, Racine, and Mme de Sévigné. [3] (Not currently offered)

262. The Avant-Garde in Modern French Theater. Reactions against traditional representational theater since the mid-nineteenth century. Attempts to revive older theatrical forms as well as to create new genres. Prerequisite: 220. [3] (Not currently offered)

265. From Romanticism to Symbolism. Nineteenth-century literature through its major movements; Romanticism, Realism, Naturalism, and Symbolism. [3] (Not currently offered)

267. Twentieth-Century French Literature. Critical readings of representative works organized thematically with emphasis on their contextual and intertextual relationships. Offered in Vanderbilt-in-France. [3] (Not currently offered)

270. The French Literary Tradition. Critical, comparative and historical study of texts that represent the tradition and innovations responsible for an evolving national identity. Limited to senior French majors and minors. FALL, SPRING. [3] Froment-Meurice.

280. Comparative Syntax of French and English. Intensive work on French syntax, based on translation. Open to seniors and graduate students. Prerequisite: 226. [3] (Not currently offered)

287. Internship in France. Under faculty supervision, students enrolled at Vanderbilt-in-France gain experience through volunteer work assignments. An application and approval by the program director are required for participation in the program. A report and research paper are submitted at the end of the internship. Taken pass/fail. FALL, SPRING. [Variable hours credit 1–2] Ward.

289. Independent Study. Content varies according to the needs of the individual student. Primarily designed to cover pertinent material not otherwise available in the regular curriculum. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed 12 over a four-semester period]

294a. Special Topics in French Literature. Prerequisite: 220. FALL. [3] Church.

294b. Special Topics in French Literature. Prerequisite: 220. FALL. [3] Amer.

295. Special Topics in French Language and Civilization. Prerequisite: 201. SPRING. [3]

299a–b. Senior Honors Thesis. [3–3] Staff.

300. Introduction to Research. [3]

302. History of the French Language: Medieval Period. [3]

310. Foreign Language Teaching: Theory and Practice. [3]

315. Seminar in French Language. [3]

318. Applied French Linguistics. [3]

320. Linguistics and the Study of French Literature. [3]

332. Seminar: Chrétien de Troyes. [3]

338. Seminar in Sixteenth-Century French Literature. [3]

342. Seminar in Seventeenth-Century French Literature. [3]

353. Seminar in Eighteenth-Century French Literature. [3]

362. Seminar in Nineteenth-Century French Literature. [3]

372. Seminar in Twentieth-Century French Literature. [3]

380. French Literary Theory. [3]

388. Seminar in Francophone Literature. [3]

394. Special Topics in French Studies. [3]

Italian

Students who have not studied Italian in high school should begin their studies at Vanderbilt in Italian 101.

100. Elementary Italian. Elementary reading, writing, speaking, and listening, with emphasis on practical usage. Offered in Vanderbilt-in-Tuscany to students who have not previously studied Italian. [3] Staff.

101a–101b. Elementary Italian. Elementary reading, writing, speaking, and listening, with emphasis on practical usage. Introduction to simple literary language. Classes meet five times weekly. Open to students who have studied little or no Italian before. [5–5] Staff.

102. Intensive Elementary Italian. An accelerated approach to reading, writing, speaking, and listening. Emphasis on practical usage. Open to students with knowledge of another Romance language and to students planning to study at Vanderbilt-in-Tuscany. No credit for students who have completed 101a–101b. SPRING. [5] Barrett.

103. Intermediate Italian. Review of Italian grammar, with composition, conversation, and reading of modern Italian texts. Prerequisite: 101b or equivalent. FALL. [3] Barrett.

201. Grammar and Composition. Emphasis on syntax, idiomatic expressions, and current usage to develop ability to write Italian correctly. Prerequisite: 103. SPRING. [3] Monga.

202. Advanced Grammar and Composition. Offered at Vanderbilt-in-Tuscany. Prerequisite: 201. [3]

214. Spoken Italian. Development of oral fluency through in-class drills, laboratory assignments, class discussions, and presentations. Listening to and transcribing tapes and preparing original presentations. Prerequisite: 103. FALL. [3] D'Aquino.

215. La Toscana. The culture of ancient and modern Tuscany, including its geography, history, art, and literature. Offered at Vanderbilt-in-Tuscany. Prerequisite or corequisite: 201. [3]

216. Summer Study Tour. Concentrates on one of several Italian provinces; preparation by readings and discussion; field trips during the session. Offered at Vanderbilt-in-Tuscany. [1]

220. Introduction to Italian Literature. Critical reading of major works of Italian literature from the beginning to the present. Prerequisite: 201. [3] (Not currently offered)

230. Italian Civilization. The political, intellectual, social, and economic history of Italy from 1300 to the present time, with particular emphasis on the writings of major political and philosophical authors. Prerequisite: 201. [3] (Not currently offered)

231. Readings from Dante's *Divina Commedia*. Examination of Dante's language and philosophical tenets through study of style, characters, and themes. [3] (Not currently offered)

232. Literature of the Middle Ages and Renaissance. The ideas and forms of the Trecento, Quattrocento, and Cinquecento, as reflected in the philosophy, history, literature, and art history of these periods. Major writers and their influence on Western European literatures. Prerequisite: 220. [3] (Not currently offered)

233. The Literature of Barocco, Illuminismo, and Romanticismo. A survey of the literature of the seventeenth through nineteenth centuries, with particular reference to the influence of European literatures in Italy. Prerequisite: 220. [3] (Not currently offered)

235. The Literature of the Novecento. An examination of poetry and prose in their social and historical contexts. Prerequisite: 220. [3] (Not currently offered)

239. Topics in Contemporary Italian Civilization. Short stories, historical documents, and articles from the press. Prerequisite: 201. [3] (Not currently offered)

240. Modern Italian Cinema. A study of the most significant works from the Neorealismo to contemporary Italian film makers. Prerequisite: 201. SPRING. [3] Monga.

289. Independent Study. A reading course, the content of which varies according to the needs of the individual student. Primarily designed to cover pertinent material not otherwise available in the regular curriculum. FALL, SPRING. [Variable credit 1–3 each semester, not to exceed 12 over a four-semester period]

294. Special Topics in Italian Literature. Prerequisite: Italian 220. [3]

Courses in English Translation

224. Dante's Divine Comedy. (Also listed as English 224, Comparative Literature 224, and Humanities 224) Reading and analysis of the complete *Inferno* and a study of selected cantos from the *Purgatorio* and *Paradiso*, all in English translation. [3] (Not currently offered)

295a–295b. Special Topics in Italian Language, Literature, or Civilization in Translation. [3–3]

Geology

CHAIR Leonard P. Alberstadt

DIRECTOR OF UNDERGRADUATE STUDIES Molly Fritz Miller

DIRECTOR OF GRADUATE STUDIES Calvin F. Miller

PROFESSORS EMERITI Arthur L. Reesman, Richard G. Stearns

PROFESSORS Calvin F. Miller, Molly Fritz Miller, William G. Siesser

ASSOCIATE PROFESSORS Leonard P. Alberstadt, John C. Ayers

ASSISTANT PROFESSORS Martin C. Kleinrock, Jay S. Noller

SENIOR LECTURER Karen Shen

I GEOLOGY is the study of the planet Earth. It is concerned with the Earth's age and origin and with the processes that have acted and continue to act upon it. Geology focuses on the physical and biological history that is recorded in rocks and landforms. In addition, a particularly critical emphasis today is on the changes in Earth processes brought about by humanity and on the immediate future of the planet.

The Department of Geology offers an undergraduate major leading to the B.A. or B.S. degree. Students majoring in geology participate in field and laboratory work. The comparatively small size of the faculty and student body allows many opportunities for faculty-student interaction. Students use the major as preparation for graduate study, for careers in environmental studies and resource exploration (petroleum, minerals), or for related careers in such fields as land use planning, teaching, law, or engineering.

Research programs in the department, which in many cases involve students, employ field, analytical, and experimental methods. A wide variety of geological processes are investigated, ranging from the migration of fluids and generation of magmas at deep levels, to the movement of tectonic plates and formation of the ocean floor, to the evolution of sedimentary and biological environments, to geological processes in the human environment. Study areas, in addition to Middle Tennessee, include the southwestern United States, Peru, Antarctica, and the Indian, Atlantic, and Pacific Oceans.

Programs of Concentration in Geology

Three programs of concentration are available. Program I (concentration in Geology) can provide a background for careers or post-graduate work in related fields such as teaching, law, or business, or, with appropriate supporting sciences and mathematics, for graduate school and some professional positions in the geological sciences. Program II (concentration in Environmental Geology) prepares students for careers or graduate work in environmental geosciences. Program III (Honors) is designed for excellent, highly motivated students who want to pursue research as undergraduates. Course requirements for each concentration are listed below.

I: Geology Concentration

101
102

4
4

II: Environmental Geology

101 or 104
225

III: Honors

4
4

Course work as for
Program I or II 31-36

220	4	240	4	292a–292b	4–6
225	4	260	3		
226	4	Two of the following:			
230	4	230, 250, 257, 262	6–7		
240	4	Two of the following:			
One additional 200- or 300-level course other than 289 or 291	3	102, 201, 220	7–8		
		265 or a summer course in field methods (with prior departmental approval)	3		
		One additional 200- or 300-level course other than 289 or 291	3		
Total hours	31	Total hours	34–36	Total hours	35–42

Program I. Geology Concentration. Provides students with a comprehensive background in Geology. In addition to the courses listed above, students who intend to pursue graduate study or a career in the geological sciences are strongly encouraged to take one year of chemistry, one year of calculus, and one year of physics. (Ecology or evolution may be more appropriate for some students than the second semester of physics.)

Program II. Environmental Geology Concentration. Provides students with course work needed for a career or graduate studies in environment-related aspects of the geological sciences. In addition to the courses listed above, students must complete supporting work in mathematics and the natural sciences. This includes Physics 116a, 117a, or 121a; Chemistry 102a–b; one year of calculus; and an additional course approved by the geology faculty in mathematics, engineering, or any of the natural sciences other than geology.

Program III. Honors. Provides research experience as well as thorough course work preparation for a career or graduate studies in the geological sciences. Interested students should apply to the undergraduate adviser for entry into the honors program before the end of fall semester, junior year. A minimum of a 3.000 grade point average both overall and in the major is required for entry into the honors program.

Working closely with a faculty adviser, students in the honors program undertake a research project of interest to both the student and faculty member during the senior year. The project is submitted as a senior thesis which is reviewed by two faculty members; it is also presented orally to geology faculty and students during the spring semester. In order to graduate with honors in geology, a student must: (1) maintain a 3.000 average; (2) complete 4 to 6 hours of Geology 292a–292b, including a written senior thesis; (3) adequately present the results of his/her research in written form to two members of the faculty and orally to students and faculty of the department; and (4) complete supporting work in mathematics and relevant natural sciences. This includes Physics 116a, 117a, 121a; Chemistry 102a–102b; one year of calculus; and an additional course approved by the geology faculty in mathematics, engineering, or any of the natural sciences other than

geology. A student may petition the geology faculty to substitute an alternative list of courses in mathematics and the natural sciences.

Minor in Geology

The minor in Geology provides students with a broad background in Earth processes, systems, and history, and an introduction to environmental issues. This background is highly relevant to many different fields of endeavor. The minor does not, however, prepare students for graduate studies or employment as Earth scientists.

The minor in Geology consists of at least 5 courses (16 hours), including Geology 101, 102, 103, or 104. No more than three courses may be at the 100 level. No credit toward the minor is given for Geology 106, 150, 289, or 291.

Licensure for Teaching

Candidates for teacher licensure in earth and space science at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

100. Environmental Geology. Geologic phenomena affecting man and his environment. Introduction to various geologic hazards such as earthquakes, landslides, flooding, and coastal erosion. A survey of mineral and energy resources, waste disposal and land-use planning. Does not count towards the major in geology. FALL, SPRING. [3] Noller, Ayers, Shen.

101. The Dynamic Earth: Introduction to Geological Sciences. Processes that have changed the earth. Relation between these processes and their products (e.g., earthquakes, minerals and rocks, mountains, oceanic features); interactions between processes affecting the solid, liquid, and gaseous components of earth; impact on humans. Three hours of lecture and one laboratory session. FALL, SPRING, SUMMER. [4] Staff.

102. Geological History of the Earth. The methods used to interpret earth history and their development. The organization of matter into minerals, rocks, animals, and plants, and how such organizational frameworks have interacted and changed through time. Geological history of North America as a general example of all continents. Three lectures and one laboratory per week. FALL. [4] Alberstadt.

103. Oceanography. An introduction to the geology, biology, chemistry, and physics of the marine environment. Three lectures and one laboratory period per week. SPRING. [4] Siesser.

104. Earth Interactions. A practical guide to living on the planet earth. An integrated study of the interactions between the solid earth, atmosphere, ocean, and biosphere emphasizing the impact of human manipulations of these earth systems. Topics include earth history, climate change, ocean currents and tides, and ecosystems. Human transformation of the global environmental and the question of environmental sustainability. Three hours of lecture and one laboratory period each week. FALL. [4] Shen.

106. Marine and Coastal Environments. Human interaction with the marine environment. Emphasis on weather and climate, marine ecology and productivity, chemical cycling and pollution, and the processes forming the earth's crust and the coastal zone. A field trip is planned. MAY. [3] Reesman.

115. Freshman Seminar. [3] (Not currently offered)

150. Geology and Its Influence on Civilization. Physical geology in relation to human life and works in the United States. Topics include bedrock geology, geophysics, soils, topography, hydrology, climate, and useful earth materials. Cultural and historic factors are considered. Prerequisite: 101. MAY. [3] Stearns.

220. Life Through Time. Ecology, classification, evolutionary history of important groups of fossils, emphasizing invertebrates. Change in marine ecosystems through geologic time. Causes and effects of rapid evolution events and mass extinctions. Three hours of lecture and one laboratory period per week. Prerequisite: 101 or junior standing as a biology major. No credit for graduate students in geology. SPRING. [4] M. Miller.

225. Earth Materials. Solid materials that make up the Earth: rock, soil, and sediment—with emphasis on the minerals that are their major constituents. Hand specimen, optical, and X-ray methods of description and identification. Physical and chemical processes that form and modify Earth materials and the use of these materials in interpreting Earth processes of the past and present. Field trips. Three lectures and one laboratory per week. Prerequisite: 101 or 104. FALL. [4] C. Miller.

226. Petrology. Nature, distribution, and theories of origin of igneous, metamorphic, and sedimentary rocks. Mineralogy as a function of rock-forming conditions. Laboratory emphasis on description and interpretation of rocks, using hand sample and microscope techniques. Field trips. Three lectures and one laboratory period per week. Prerequisite: 225. No credit for graduate students in geology. SPRING. [4] C. Miller.

230. Sedimentology. The origin and composition of sedimentary particles, their transportation to the site of deposition, actual deposition, and the processes involved in lithifying sediments into solid rock. Emphasis on interpretation of ancient source areas and depositional environments. Terrigenous, carbonate, and other rock types will be studied. Field trips. Three lectures and one laboratory period. Prerequisite: 226. No credit for graduate students in geology. FALL. [4] Siesser.

231. Stratigraphy. Principles of organizing strata into units based on their lithologic character, their age relationships, and their fossil content. Interpretation of vertical and horizontal stratigraphic relationships. Surface and subsurface correlation techniques, with emphasis on the use of microfossils in subsurface correlation. Radiometric and magnetic dating of stratigraphic units. Critical evaluation of the regional stratigraphy of a selected area. Field trips. Prerequisite: 220. [3] Siesser. (Offered in alternate years)

240. Structural Geology and Rock Mechanics. Principles of rock deformation; mechanics, fractures, folds, foliation, primary structures. Field trips. Three lectures and one laboratory period per week. Pre- or corequisite: 226. No credit for graduate students in geology. SPRING. [4] Kleinrock.

250. Soil and Environment. Morphology, taxonomy and genesis of soils. Natural and human-induced changes to the soil environment, including climatic, biologic, cultural, and geologic factors. Solutions to environmental problems related to soil. Field trips. Prerequisite: 100, 101, or 104 and junior standing in natural science, anthropology, or engineering. SPRING. [3] Noller.

251. Soil Field and Laboratory Methods. Field description of soil profiles; soil geomorphic mapping; laboratory analysis of soils. Individual research projects are required. Prerequisite or corequisite: 250. SPRING. [1] Noller.

255. Explorational Geophysics. Seismic, gravitational, magnetic, electrical, and other physical techniques used to explore for concealed geologic features. Some study of earthquakes in relation to discovery of deep geologic features. Prerequisite: 230 or 240, senior standing in engineering or physics, or consent of instructor. [3] (Not currently offered)

257. Hydrogeology. An introduction to hydrogeology with emphasis on distribution, movement, and chemistry of groundwater. Principles of groundwater flow, water chemistry, and geology related to exploration, evaluation, development, and protection of groundwater resources. Prerequisite: 225 and one semester each of chemistry, physics, and calculus. [3] Staff. (Not currently offered)

260. Geochemistry. Application of chemistry to study the distribution and cycling of elements in the crust of the earth. Includes chemical bonding and crystallization, phase rules and phase diagrams, chemical equilibria, theories on the origin of elements, earth, ocean, atmosphere, and crust. Prerequisite: 225 and Chemistry 102a–102b, or consent of instructor. FALL. [3] Ayers.

261. Geomorphology. Analysis of the earth's landforms, their morphology, history and the processes that form them. The building of relief and its subsequent transformation by geologic processes on hillslopes, rivers, coasts, wetlands and glaciers. The natural history and human impacts on land forms. Field trips. Prerequisite: 101 or 104 and junior standing in natural science, anthropology, or engineering. [3] (Not currently offered)

262. Quaternary Geology. The history of global environmental change over the past two million years with emphasis on the stratigraphic tools used to reconstruct environmental history including relevant geochronologic methods. Synopsis of specific paleoenvironments and case studies of glacial, coastal, alluvial, eolian, and tectonic change. Field trips. Prerequisite: 100 or 101 and junior standing in natural science, anthropology, or engineering. SPRING. [3] (Not currently offered)

279 Problems in Sedimentology and Paleobiology. Relation between past life and its environment as recorded in sedimentary rocks. Emphasis on reconstructing the depositional environment and the ancient communities recorded in Paleozoic sedimentary sequences in Tennessee, and investigating recent research on the interplay between ecosystems and physical environment during critical periods of earth history. Prerequisite: 220 and 226. SPRING. [3] M. Miller.

289a–289b. Directed Study. Readings with related field and/or laboratory research in pursuit of a scholarly project conceived and executed under the supervision of a faculty member. Open to senior majors and graduate students. Other students must have consent of department chair. Does not count toward minimum requirements for the major. FALL, SPRING, SUMMER. [Variable credit: 1–2 each semester] Staff.

291a–291b. Independent Study. Readings with related field and/or laboratory research in pursuit of a scholarly project conceived and executed under the supervision of a faculty member. Open to senior majors and graduate students. Other students must have consent of department chair. Does not count toward minimum requirements for the major. FALL, SPRING, SUMMER. [Variable credit: 1–2 each semester] Staff.

292a–292b. Senior Honors Research. Independent research under faculty supervision culminating in an oral presentation and written thesis submitted to the faculty. Open only to honors candidates. Does not count toward minimum requirements for the major. FALL, SPRING. [Variable credit: 2–3 each semester] Staff.

312. Carbonates. [3]

380. Marine Tectonics. [3]

315. Igneous Petrochemistry and Petrogenesis. [3]

320. Aqueous Geochemistry. [3]

325. Micropaleontology. [3]

Germanic and Slavic Languages

CHAIR Alice Carmichael Harris

DIRECTOR OF UNDERGRADUATE STUDIES IN GERMAN John A. McCarthy

DIRECTOR OF UNDERGRADUATE STUDIES IN RUSSIAN Konstantin V. Kustanovich

DIRECTORS OF GERMAN STUDIES John A. McCarthy, Helmut W. Smith

DIRECTOR OF GRADUATE STUDIES Dieter H. O. Sevin

PROFESSORS EMERITI John H. Cheek Jr., James E. Engel, Antonina Filonov Gove,
Richard N. Porter, Walburga Von Raffler-Engel

PROFESSORS Alice Carmichael Harris, John A. McCarthy, Helmut F. Pfanner,
Dieter H. O. Sevin

ASSOCIATE PROFESSORS Konstantin V. Kustanovich, David A. Lowe

ASSISTANT PROFESSORS Laurie R. Johnson, Angela Lin, Meike G. J. Werner

I THE Department of Germanic and Slavic Languages offers programs of concentration in German and Russian.

Students who major in German take courses in language, literature, and civilization. Many students increase their knowledge of the language by spending one or two semesters in the Vanderbilt-in-Germany program at the University of Regensburg. This program is unique in that students enroll directly in a German university with the full status of German university students.

The Russian program has a special commitment to undergraduate training in all aspects of Russian culture and language. Many students find it beneficial to combine a Russian major with a second concentration in a related field. Students have the opportunity to spend a semester or a summer studying in Russia.

Program of Concentration in German

Program I: German Language and Literature

Students majoring in German are required to take at least 30 hours from courses numbered higher than 110, not including German 245–246; only three hours from German 171 or 172 may count toward the major. A minimum of 9 hours in conversation are required; this requirement can be fulfilled by a combination of any of the following courses: 110, 213, or 214. Each student must also take 221 and 222 and at least 9 additional hours numbered higher than 222. Majors are expected to consult their advisers before registration each semester.

Program II: German Studies

Students majoring in German Studies are required to complete a total of 36 hours of coursework, including the following:

German 201

German 221 and 222

6 hours in conversation-composition (110, 213, 214)

- 9 hours of German beyond 222
- 6 hours in “German text” courses (defined below)
- 6 hours in “German content” courses (defined below)

A “German text” is a course in a discipline other than German literature (such as German history, German political science, or German philosophy), which is taught in English, and in which the student would read course texts in German in a significant sense. A “German content” course is a course in German literature or a neighboring discipline (such as German history, German political science, or German philosophy) in which course texts may be read in English or German. Students should consult the instructor of the course regarding “German text” courses, and they must secure the approval of the Director of German Studies for both “German text” and “German content” courses.

Vanderbilt-in-Germany Program

German majors participating in the Vanderbilt-in-Germany program may substitute courses at the University of Regensburg as follows: the 4-hour intensive language course at Regensburg may be used to satisfy one required 3-hour conversation course at Vanderbilt. In addition to the intensive language course, up to 4 hours may be taken in the department of *Deutsch als Fremdsprache*. The conversation requirement is reduced to 6 hours for students who participate in Vanderbilt-in-Germany for two semesters, carrying a full load and remaining in good standing. For German 221, either a 4-hour course in “Introduction to Literature” (older period) or a 2-hour course in “Introduction to Literature” (older period) together with a pertinent *Übung* may be substituted; for German 222, either a 4-hour course in “Introduction to Literature” (modern period) or a 2-hour course in “Introduction to Literature” (modern period) together with a pertinent *Übung* may be substituted. Participants in the Vanderbilt-in-Germany program should have completed German 221 and 222 (or their equivalents) before their return to campus.

Students participating in the Vanderbilt-in-Germany program for the full year can count up to 18 hours toward the German major or minor (4 hours for the intensive language course and 14 hours for advanced German courses, of which a maximum of 4 hours may be taken in the department of *Deutsch als Fremdsprache*). Students participating in the Vanderbilt-in-Germany program for one semester can count up to 12 hours toward the German major or minor (4 hours for the intensive language course and 8 hours for advanced German courses, of which a maximum of 4 hours may be taken in the department of *Deutsch als Fremdsprache*). Majors must take at least 6 hours of formal literature courses numbered 233 and above at the Nashville campus.

Honors Program

Candidates for honors in German who meet College and departmental requirements must complete all requirements for the concentration in German, and, in addition, must study a minimum of one semester at a German-speaking university, complete 6 hours of 300-level courses; maintain at least a B+ average in their German courses and a B overall average; write an honors thesis; and pass an oral examination during the last semester.

Program of Concentration in Russian and European Studies

Students in Russian may elect this interdisciplinary major consisting of 39 hours of course work, as follows:

1. At least 18 hours in Russian language, literature and culture, including: 12 hours of Russian language beyond first year (normally Russian 203–204, 223–224) and 6 hours selected from Russian 171–172 (Russian culture) and Russian 221–222 (Survey of Russian Literature (in translation)).

2. At least 12 hours in European Studies, history, and political science, including:

European Studies 250 and 201 plus 6 hours selected from Political Science 205, 212, History 225, 226, and 238. For this requirement students can also select from the following courses if they are offered: History 222 and 237.

3. At least 9 hours of approved electives selected from the following courses: Russian 257, 258, 289, Political Science 213, History 188, 239.

4. And 3 hours in an approved social science elective within the European Studies concentration. For this requirement students can also select from the following courses if they are offered: European Studies 225 and European Studies/Political Science 231.

Courses taken in Russia or elsewhere will be evaluated on a case by case basis.

Program of Concentration in Russian

Requirements for a major are a minimum of 27 hours beginning after 102. Either 171 or 172 may count, but not both. Required courses are 203–204, 221–222, and 223–224.

Minor in German

Program I: German Language and Literature

The minor in German consists of a minimum of 18 hours of course work at the level of German 112 or higher, excluding German 171–172, 245–246, and courses taken as independent study. Specific requirements are as follows:

One course selected from German 213 and 214	3
German 221 and 222	6
Two courses selected from German 220 and above	6
Total hours:	<u>15</u>

Program II: German Studies

The minor in German Studies consists of a minimum of 21 hours of course work as follows:

- One course selected from German 213 and 214
- German 221 and 222
- German 201
- 3 hours of German literature, a course numbered above German 222
- 3 hours of a "German text" course
- 3 hours of a "German content" course

Students who participate in the Vanderbilt-in-Germany program may substitute course work taken at the University of Regensburg in the way described under Program of Concentration in German above.

Minor in Russian

A minor in Russian consists of 18 hours of course work above 102, but not counting courses in translation (171–172).

Licensure for Teaching

Candidates for teacher licensure in German at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

German

Students with some experience in German should consult the Department for placement.

101. Elementary German I. Development of the four language skills of reading, listening, speaking, and writing. FALL, SPRING. [5] Staff.

102. Elementary German II. Continuation of 101. Prerequisite: 101. FALL, SPRING. [5] Staff.

103. Intermediate German. Review of German grammar as a basis for reading, conversation, and composition. Prerequisite: 102. FALL, SPRING. [3] Staff.

Starred course 104 is prerequisite for all higher numbered German courses, with the exception of conversation courses and courses taught in English.

★104. Intermediate German. Practice in reading, listening, speaking, and writing with emphasis on reading. (Short stories and one longer work). Prerequisite: 103. FALL, SPRING. [3] Staff.

110. Introductory Conversation and Composition. Prerequisite: 102. FALL, SPRING. [3]

115W. Freshman Seminar. [3]

171–172. German Culture and Civilization. 171: Middle Ages to German Idealism. 172: Romanticism to the present. Important contributions of German civilization in literature, art,

music, and architecture, placed in historical context. No knowledge of German required. [3–3] Staff. (Not currently offered)

201. Introduction to German Studies. Culture, literature, history, philosophy of German-speaking countries presented through contemporary and multidisciplinary critical concepts and practices. May include technology and German culture, theorizing mass culture, literature and other forms of cultural production, tradition and Modernity. SPRING. [3, 4 with additional one-hour weekly German-language section] Johnson.

213–214. Intermediate German Conversation and Composition. Graduate credit for M.A.T. candidates only. Prerequisite: 103. FALL, SPRING. [3–3] Werner, Sevin.

216. Business German. The culture of the German business community; differences which hinder communication between German-speakers and non-German-speakers in the business setting; development of aural/oral and written skills. Business practices, policies, and laws in German speaking countries; advertising and marketing strategies, letters, vitae, phone calls, and personal interviews. [3] Sevin.

220. Advanced Grammar. Study of word formation and sentence structure in modern German, supplemented by contemporary readings, with discussion. Not open to students who have participated in the Regensburg exchange program. [3] Pfanner.

221–222. German Culture and Literature. Introduction to major periods and genres of German cultural production from the middle ages to the present; overview of major social and political developments. Literary, philosophical, and other texts. Readings and discussions in German. FALL, SPRING. [3–3] Johnson, Werner.

235. German Romanticism. The contributions of Schlegel, Tieck, Novalis, Eichendorff, and others to literature and theory. Intellectual, social, and political currents. [3] Johnson.

237. Women in Transition. The portrayal of women in German literature from the eighteenth century to the present, with special attention to their changing role in family and society and their struggle for emancipation. No knowledge of German required. [3] (Not currently offered)

245–246. German Masterpieces in English Translation. Emphasis on the classical period and the present. Authors such as Goethe, Grass, Hesse, Kafka, T. Mann, and Schiller. No knowledge of German required. [3–3] (Not currently offered)

248. The German Lyric. A formal and historical study of German lyric poetry. [3] McCarthy.

262. German Literature of the Middle Ages. A survey of the main movements and principal works with emphasis on Middle High German literature. FALL. [3] Werner.

263. The Age of Goethe. A literary-historical survey of the development of German literature during Goethe's lifetime. Reading and discussion of selected representative works. [3] McCarthy.

265. Twentieth-Century Drama. Modern German drama and dramatic theory from Naturalism to the present. Emphasis on Brecht and post-Brechtian drama. [3] Pfanner.

266. Nineteenth-Century Prose. A study of representative works of the main literary trends from Romanticism to Naturalism. [3] Johnson.

267. The German Novel of the Twentieth Century. A study and interpretation of the main literary trends and major figures in the novel from Expressionism to the present. SPRING. [3] Sevin.

268. Modern German Short Story. From 1945 until the present, including such authors as Ilse Aichinger, Heinrich Boell, Wolfgang Borchert, Ingeborg Bachmann, and Alexander Kluge. [3] Pfanner.

269. East German Literature. An introduction to the main literary trends and authors of the German Democratic Republic (1949–1989). [3] Sevin.

270. German Film. A survey of the German film with special attention to its sociocultural context and to pertinent theories of photography and of cinematic narration. No knowledge of German required. FALL. [3] Sevin.

271. Women at the Margins: German-Jewish Women Writers. (Also listed as Women's Studies 271) Examination of themes, forms, and sociocultural issues shaping the work of German-Jewish women writers from the Enlightenment to the present. Readings and discussions in English. SPRING. [3] Werner.

280. *Sturm und Drang*. The contribution of the *Sturm und Drang* (1766–84) to German literature and critical theory. English and French influences will be noted. Works by Herder, Goethe, Wagner, Schiller, and others. [3] McCarthy.

289a–289b. Independent Readings. Designed for majors and qualified undergraduates. Consists of a project to be carried out under the supervision of a member of the department. All projects must be approved by the department. [Variable credit: 1–3 each semester, not to exceed a total of 6 over a four-semester period, in both courses combined]

294a–294b. Selected Topics. May be repeated to a total of 12 hours. FALL. [3–3] McCarthy.

301. Stylistics. [3]

310. Foreign Language Teaching: Theory and Practice. [3]

314. Bibliography and Methods. [3]

316. Literary Theory and Criticism. [3]

330. Expressionism. [3]

335. Enlightenment and Its Literary Connection. [3]

340. Beyond Good and Evil. [3]

351. Philosophical Backgrounds of German Literature. [3]

385a–385b. Problems in Germanic Languages and Literatures. [3–3]

387. Seminar: Studies in Medieval Literature. [3]

388. Seminar: Studies in Literature 1400–1680. [3]

389. Seminar: 18th-Century German Literature. [3]

390. Seminar: 19th-Century German Literature. [3]

391. Seminar: 20th-Century German Literature. [3]

392. Seminar: Problems of Theory in German Studies. [3]

Russian

101. First-Year Russian. Elementary conversation and reading with an emphasis on everyday situations. An introduction to Russian culture and life through contemporary Russian materials. Five hours of class work. FALL. [5] Kustanovich.

102. First-Year Russian. Continuation of 101 with emphasis on reading and talking about texts. Prerequisite: 101. SPRING. [5] Kustanovich.

171–172. Russian Culture. The evolution of Russian civilization. The interplay between East and West in the shaping of Russian cultural achievements and national identity. No knowledge of Russian required. 171: From Kievan Russia to 1880. 172: From 1880 to the present. [3–3] Lowe, Kustanovich.

203–204. Second-Year Russian. Practice of all four skills (reading, speaking, listening, and writing), grammar review, reading of contemporary Russian texts. Prerequisite: 102 or equivalent. FALL, SPRING. [3–3] Kustanovich, Lowe.

213–214. Intermediate Russian Conversation. For students taking 203 and 204 but open to others also. Prerequisite: 102. [3–3] (Not currently offered)

220. Advanced Grammar. Modern Russian word formation, verb aspect usage, sentence word order, and structure of complex sentences. Prerequisite: 204 or equivalent. [3] (Not currently offered)

221–222. Survey of Russian Literature in English Translation. Main currents, writers, and works of Russian literature. 221: the nineteenth century: Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, and Tolstoy. 222: the twentieth century: Bulgakov, Pasternak, Solzhenitsyn, Akseonov, Trifonov, and Petrushevskaya. No knowledge of Russian required. FALL, SPRING. [3–3] Lowe, Kustanovich.

223–224. Composition and Conversation. Development of all language skills at the intermediate-advanced level. Reading of contemporary short stories. Prerequisite: 204. FALL, SPRING. [3–3] Lowe.

257–258. Advanced Composition and Conversation. Prerequisite: 224 or equivalent. [3–3] (Not currently offered)

289a–289b. Independent Readings. Designed for majors and qualified undergraduates. Consists of a project to be carried out under the supervision of a member of the department. All projects must be approved by the department. [Variable credit: 1–3 each semester, not to exceed a total of 6 over a four-semester period, in both courses combined]

294a–294b. Selected Topics. May be repeated to a total of 12 hours. [3–3]

Hebrew

1 STUDENTS seeking further information regarding Hebrew courses may consult the chair of the Department of Religious Studies.

111a. Elementary Hebrew. Introduction to alphabet, the basics of grammar, and elementary conversation. Classes meet three times per week with an additional two hours a week required in the language laboratory. FALL. [4] Halachmi.

111b. Elementary Hebrew. Continuation of 111a. Greater stress upon conversation and grammar. Classes meet three times a week with an additional two hours a week required in the language laboratory. SPRING. [4] Halachmi.

113a. Intermediate Hebrew. Introduction to modern Hebrew reading, conversation, advanced grammar, and conversation. Classes meet three times a week with an additional three hours a week spent in independent work in the language laboratory. FALL. [3] Halachmi.

113b. Intermediate Hebrew. Continuation of 113a. Greater emphasis on reading and writing. Classes meet three times a week with an additional three hours a week spent in independent work in the language laboratory. SPRING. [3] Halachmi.

201. Grammar and Composition. Prerequisite: 113b. [3] Halachmi. (Offered 2001/02)

289a–289b. Independent Study in Modern Hebrew. [Variable credit: 1–3 each semester, not to exceed a total of 6]

History

CHAIR Marshall C. Eakin

DIRECTOR OF UNDERGRADUATE STUDIES Joel F. Harrington

DIRECTOR OF GRADUATE STUDIES James A. Epstein

PROFESSORS EMERITI Howard L. Boorman, Paul K. Conkin, Charles F. Delzell,
Dewey W. Grantham, J. León Helguera, Douglas E. Leach, Frederick D. Schneider,
V. Jacque Voegeli, Donald L. Winters

PROFESSORS Jeremy Atack, Simon Collier, Dennis C. Dickerson, Don H. Doyle,
Robert Drews, James W. Ely Jr., James A. Epstein, Jimmie L. Franklin,
Hugh Davis Graham, Larry J. Griffin, Robert A. Margo

FULBRIGHT DISTINGUISHED PROFESSOR Hermann J. Rupieper

ADJUNCT PROFESSOR Ronald A. Messier

ASSOCIATE PROFESSORS Michael D. Bess, David Lee Carlton, Marshall C. Eakin,
Joel F. Harrington, Yoshikuni Igarashi, Jane Gilmer Landers, Samuel T. McSeveney,
Matthew Ramsey, Thomas Alan Schwartz, Helmut Walser Smith, Margo Todd,
Arleen M. Tuchman, Francis W. Wcislo

ADJUNCT ASSOCIATE PROFESSOR Peter Field

ASSISTANT PROFESSORS William Caferro, Katherine B. Crawford, Laura A. McDaniel

SENIOR LECTURERS Yollette T. Jones, William S. Longwell

I THE Department of History offers a variety of courses on the history of Europe, the United States, Latin America, East Asia, Africa, and the Middle East. Some courses focus on a particular historical period, while others explore the political, economic, intellectual, or social history of an area. The study of history offers a strong foundation for a liberal education and a means of understanding the contemporary world.

Ordinarily there are no prerequisites for history courses. Students majoring in history may participate in the History Majors' Association.

Program of Concentration in History

A major in history requires completion of 30 hours in history. No more than 6 hours of AP or IB credit may be counted toward the major. Senior majors may enroll in 300-level courses for undergraduate credit with the approval of the instructor, the adviser, and the Dean for Graduate Studies and Research. The concentration requirements allow the student to focus on the history of Europe; Latin America, East Asia, and other nonwestern areas; or the United States, but students must take courses in the other two fields as well. Courses should be distributed as follows:

History 295 (ordinarily in field of emphasis)	3
At least 15 hours from one of the programs below	15
At least 12 hours evenly divided (6:6) between the other two programs	<u>12</u>
Total hours	30

Program A. The History of Europe.

100, 101, 115 or 115W (as appropriate), 180, 181, 182, 184, 185, 186, 187, 188, 190 (as appropriate), 200, 202, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 218, 220, 225, 226, 227, 228, 229, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 245, 258, 259, 268, 269, and as appropriate 294, 295, 296, 297, 298a–b, and 299.

Program B. The History of Latin America, East Asia, Africa, and the Middle East. 115 or 115W (as appropriate), 154, 155, 157, 160, 161, 172, 182, 190 (as appropriate), 200, 247, 248, 249, 250, 251, 253, 254, 255, 256, 258, 259, 261, 262, 263, 264, 266, 281, and as appropriate 294, 295, 296, 297, 298a–b, and 299.

Program C. The History of the United States. 115 or 115W (as appropriate), 170, 171, 172, 173, 176, 177, 187, 188, 190 (as appropriate), 200, 204, 205, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, and as appropriate, 293b, 293c, 294, 295, 296, 297, 298a–b, and 299.

Honors Program

The honors program in history is a three-semester program of study. It offers superior undergraduate history majors a program of advanced reading, research, and writing. The honors program combines seminar work and independent study under the supervision of a thesis adviser. These provide participants a structured introduction to historical research and writing, as well as the opportunity to study defined areas of history and significant historical problems that accord with their own interests. The final objectives of the honors program are successful authorship of the honors thesis and graduation with Honors or High Honors in History.

Students meeting college and departmental requirements will enroll for a total of 12 credit hours: History 297, Junior Honors Seminar in History (3 hours); History 298a–298b, Senior Honors Research Seminar (6 hours); and 299, Senior Honors Thesis (3 hours). In addition, successful completion of the honors program also requires one written examination on the historical literature that relates to the student's honors thesis and an oral defense of the honors thesis before a faculty committee. Both written and oral examinations will occur at the end of the third semester.

Program of Concentration in Economics and History

This is an interdisciplinary program split between Economics and History that provides a more focused program of study while requiring fewer credit hours than a double major in the two fields. The program consists of 45 hours of course work of which 9 hours are from a common economic history core and the remaining 36 credit hours are evenly divided between Economics and History. Students are expected to observe course-specific requirements in each department.

Minor in History

The minor in history requires a minimum of 18 hours of course work. No more than 6 hours at the 100 level may be counted toward the minor, and no more than 3 of these may be in a course numbered below 172. Exception—Students taking option IV may count any 3 of the 4 following courses: 154, 155, 157, 182. The following options are offered:

I. European History

1. 100 or 101 and
2. Five of these courses subject to the rule on 100-level courses: 180, 182, 184, 185, 186, 187, 188, 190 (as appropriate), 200, 202, 204, 208, 209, 210, 211, 212, 213, 214, 215, 216, 218, 220, 222, 225, 226, 227, 228, 229, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 245, 258, 259, 268, 269, and as appropriate, 294 or 295.

II. American History

1. 170 or 171 and
2. Five of these courses subject to the rule on 100-level courses: 172, 173, 176, 177, 187, 190 (as appropriate), 200, 204, 205, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, and as appropriate, 294 or 295.

III. Latin American History

1. 160 or 161 and
2. Any five of these courses: 172, 200, 258, 259, 261, 262, 263, 264, 265, 266, and as appropriate, 294 or 295.

IV. East Asian History

Six of these courses including no more than three at the 100 level: 154, 155, 157, 182, 207, 247, 248, 249, 250, 255, and as appropriate, 294, or 295.

100. History of Western Civilization to 1700. (Formerly 101a) Judeo-Christian and Greco-Roman foundations to the beginning of the eighteenth century. No credit for students who have completed 115W, section 48. FALL. [3] Caferro.

101. History of Western Civilization since 1700. (Formerly 101b) European history from the age of the Enlightenment to the present day. No credit for students who have completed 115W, section 49. SPRING. [3] Epstein, Smith.

115, 115W. Freshman Seminar. [3]

131. Sea Power in History. An introductory survey of the U.S. Navy's role in foreign and defense policies from the American Revolution to the present. In addition, the course will examine the broad principles, concepts, and elements of sea power throughout history. Key points will include technological advances, interservice relations, strategies, and governmental policies pertaining to sea power. This course is designed to meet the NROTC

requirement. Does not count toward history major. No credit for both Naval Science 131 and History 131. SPRING. [3] Staff.

154. History of Asian Civilization: Premodern China. (Formerly 256a) The development of Chinese civilization from ancient times to the seventeenth century. The birth and development of the Chinese identity; Confucianism, Taoism and Buddhism; the moral, military, and bureaucratic foundations of the imperial institution; the Silk Road; eunuchs and concubines; the commercial revolution. FALL. [3] McDaniel. (Not currently offered)

155. History of Asian Civilization: Modern China. (Formerly 256b) Modern China from the seventeenth century to the present. Alien rule and dynastic decay; major artistic, literary, and intellectual traditions and innovations; peasant uprisings; Western imperialism; political, cultural and social revolutions of the twentieth century; Communist rule; post-Mao economic and social reforms. SPRING. [3] McDaniel. (Offered 2001/02)

157. History of Asian Civilization: Japan. Development of Japanese civilization from ancient times to the twentieth century, emphasizing cultural traits within Japan and its relations with neighboring regions in East Asia. FALL. [3] Igarashi.

160. Colonial Latin America. (Formerly 160a) A survey of Latin American history from pre-Columbian times to the early nineteenth century. Iberian, Amerindian and African background; the conquest; construction of colonial society and institutions; wars for independence. No credit for students who have completed 160a. FALL. [3] Eakin.

161. Modern Latin America. (Formerly 160b) A survey of Latin American history from the early nineteenth century to the present. Wars for independence; rise of new nations and export-oriented economies; case studies in revolution, nationalism, and reform in the twentieth century; U.S.-Latin American relations. No credit for students who have completed 160b. SPRING. [3] Staff.

170. History of the United States to 1865. (Formerly 171a) The main social, political, economic, and cultural developments of the United States from colonization through the Civil War. No credit for students who have completed 171a or 115W, section 51. FALL. [3] Carlton, Field.

171. History of the United States since 1865. (Formerly 171b) The main social, political, economic and cultural developments of the United States from 1865 to the present. No credit for students who have completed 171b or 115W, section 50. SPRING. [3] Staff.

172. Slavery in the Americas, 1492–1822. Comparative study of slavery in the American colonies to the collapse of the great European empires. Spanish/Portuguese and English slave systems compared; development of slave trade; varieties of unfree labor; slave resistance; Afro-Creole cultures. SPRING. [3] Landers.

173. The First New Nation. (Formerly 272a) American history from the winning of independence to the 1820s. The Constitution, the formation of national government, political conflict, republicanism and the rights of minorities, national culture, foreign relations in an age of revolution. Primarily for freshmen and sophomores. No credit for students who have completed 272a. [3] (Not currently offered)

176. The United States in the 1960s. Domestic history of the U.S. during 1960–1973 emphasizing changes driven by new social forces; “baby boom” demographics, economic growth, consumer culture, and insurgent social movements (civil rights, feminism, student rights, antiwar protest, counterculture, environmentalism). FALL. [3] Staff.

177. The U.S. and the Cold War. U.S. history, 1945–1991. Emphasis on foreign policy and competition with Soviet Union. Impact of Cold War on American society. SPRING. [3] Schwartz.

180. History of Christian Traditions. (Also listed as Religious Studies 180). Christian traditions from the origins to the present. Such themes as christology, church and state, and the social and cultural contents of changing Christian beliefs, and views of the Church. SPRING. [3] Harrington. (Offered 2001/02)

181. European Economic History, 1000–1700. From the commercial revolution of High Middle Ages to Industrial Revolution. Interconnections of economic forces with politics, society, and cultures. Rise of long distance trade; development of business and accounting techniques; public finance; monetary trends; advent of capitalist ethic. SPRING. [3] Caferro.

182. Communism in China and Russia. Comparative historical experiences of twentieth-century Chinese and Russian communism. Revolutions of 1917 and 1949; governing ideological visions; revolutionary social change; dominant cultural discourse; popular understandings of liberation and oppression. SPRING. [3] McDaniel, Wcislo. (Not currently offered)

184. Nazi Germany and the Holocaust. Historical approach to the Holocaust: its origins, the way it happened, its legacy. Special attention paid to understanding the Holocaust in the context of Germany and European history. FALL. [3] Smith.

185. Sexuality and Gender in the Western Tradition to 1700. (Also listed as Women's Studies 185) Sexuality and gender in the history of Western Civilization from ancient Greece through the seventeenth century. Masculinity and political power; Christian notions of the body; changing ideas about men's and women's roles. FALL. [3] Crawford.

186. Sexuality and Gender in the Western Tradition since 1700. (Also listed as Women's Studies 186) Sexuality and gender in the history of Western Civilization since the Enlightenment. Modern notions of masculinity; femininity and domesticity; modern understandings of identity; implications of political ideologies for sexuality and gender; contemporary feminism. SPRING. [3] Crawford.

187. Pornography and Prostitution in History. (Also listed as Women's Studies 187) Commercialization of the sex trade, Renaissance to the present. Political scandal, capitalism, and globalization; effects of technological change, from the printing press to the Internet. Readings from anthropology, psychology, and feminist theory. SPRING. [3] Crawford.

188. History of World War II. Origins and causes of the global conflict, the six years of military campaigns, politics and diplomacy of warmaking, race as a factor shaping the war in Europe and Asia, impact of technological innovations, social and economic aspects of the struggle, as well as its moral and psychological implications. SPRING. [3] Bess. (Offered 2001/02)

190. Contemporary Issues in Historical Perspective. Selected topics examined in various historical contexts. Subjects vary and may include motherhood, marriage, racism, and environmentalism. FALL, SPRING. [3] Staff.

200. The History Workshop. Introduction to the "historian's craft." Reconstructing the past using primary documents, diaries, letters, memoirs, and recently declassified government papers. Methods of historical research and reasoning through individual projects. FALL, SPRING. [3] Smith, Eakin.

202. Science and Society after the Enlightenment. The intellectual, philosophical, and social factors influencing the development of scientific theories since the Enlightenment. SPRING. [3] (Offered 2001/02)

204. History of Medicine, 1750 to the Present. The scientific, technological, cultural, and professional factors influencing the rise of medicine. Emphasis on the period since about 1750 in both Europe and America. SPRING. [3] Tuchman.

205. Historical Perspectives on Women, Health, and Sexuality. (Also listed as Women's Studies 205) Women as patients and healers. Emphasis on America. 1750 to the present. Topics include women's diseases and treatments, changing definitions of "woman," sexuality, childbirth, birth control, abortion, midwives, nurses, and doctors. SPRING. [3] Tuchman.

206. Medicine, Culture, and the Body. (Also listed as Anthropology 260 and Science, Technology, and Humanities 260) Concepts of the human body from historical and cross-cultural perspectives. Exploration of experiences, representations, and medical theories of the body in birth, death, health, and illness in Western and non-Western societies. Comparison of methodologies of anthropology and history. SPRING. [3] Conklin (Anthropology) and Tuchman. (Not currently offered)

207. History of the Ancient Near East. (Also listed as Classics 207) From the neolithic period to the conquests of Alexander the Great, in the geographical area from Persia to Troy and Egypt. Special attention to the history of Israel. SPRING. [3] Drews.

208. History of Greece to Alexander the Great. (Formerly 208a; also listed as Classics 208) The Greek world from the beginning of the Mycenaean Age (1650 BC) to the end of the Classical period. Special attention to the relationship between political history and the development of Hellenism. FALL. [3] Drews.

209. Greece and the Near East from Alexander to Theodosius. (Formerly 208b; also listed as Classics 209) From Alexander's conquest of the Persian Empire to the ascendancy of Christianity in the late fourth century. Emphasis on social, cultural, and religious transformations, within the framework of political history. [3] Drews.

210. History of the Roman Republic. (Formerly 209; also listed as Classics 212) The growth and evolution of the Roman world, from the foundation of the city in the seventh century B.C. to the reign of Caesar Augustus. The Romans' unification of Italy, conquest of the Mediterranean and western Europe, adoption of Hellenism, and overthrow of the Republic. No credit for students who have taken the former 209. FALL. [3] Drews.

211. History of the Roman Empire. (Formerly 209; also listed as Classics 213) The Roman world from Augustus to the collapse of the western empire in the fifth century. Political, military, social and religious history. Special attention given to problems arising from use of the primary sources as well as to controversies in modern scholarship. No credit for students who have had 209. SPRING. [3] McGinn (Classics).

212. Medieval Europe, 300–1000. (Formerly 211a) Rome, Latin Christendom, and the East; political events and the adaptation of Roman and Christian traditions to the needs of society emerging from the invasions. FALL. [3] Caferro.

213. Medieval Europe, 1000–1350. (Formerly 211b) Economic expansion and the formation of national states; the medieval Church and the revival of learning in the twelfth and thirteenth centuries. SPRING. [3] Caferro.

214. Europe in the Age of the Renaissance. The political, social, economic, and religious history of Europe from 1300 to 1500, with particular emphasis on the intellectual aspects of the early Italian Renaissance. [3] Harrington.

215. Europe in the Age of the Reformation, 1500–1648. The political, intellectual, and social conditions underlying the Protestant revolt. The Reformation of Luther, Calvin,

Zwingli, Loyola, and other religious reformers considered within the context of the general developments of sixteenth-century history. FALL. [3] (Offered 2001/02)

216. Europe in the Age of Absolutism, 1648–1789. The rise of the absolute state and popular revolt in the seventeenth century with emphasis on France and Spain. Dutch history, mercantilism, and international conflicts. The Enlightenment viewed especially from the standpoint of Enlightened Despotism. SPRING. [3] Crawford.

218. Europe in the Age of Revolution, 1789–1815. Political, cultural, and economic upheavals in the late eighteenth and early nineteenth centuries; the French Revolution and Napoleon, romanticism, and early industrialization. Emphasis on Britain, France, and Germany. FALL. [3] (Offered 2001/02)

220. Europe in the Nineteenth Century. Major political, social, economic, and cultural developments from 1815 to 1914. SPRING. [3] (Offered 2001/02)

225. Europe From World War I to World War II. Political, socioeconomic, cultural, and colonial history of Europe from 1914 to the fall of Hitler. FALL. [3] Bess. (Offered 2001/02)

226. Europe since 1945. Origins of the Cold War; political and social transformations, East and West; the breakup of colonial empires; ideological and military tensions; intellectual and cultural trends. SPRING. [3] Bess. (Offered 2001/02)

227. Intellectual History of Early Modern Europe. The significant intellectual developments of early modern Europe in relation to their social, political, and economic background. Selected individual contributions to philosophy, political theory, literature, and science. FALL. [3] Crawford. (Offered 2001/02)

228. Intellectual History of Modern Europe . Major intellectual and cultural developments since the French Revolution. Emphasis on political and social thought, with some attention to science, philosophy, literature, and the arts. [3] Ramsey. (Offered 2001/02)

229. Economic History of Europe. (Also listed as Economics 271) The stages of development of capitalism and modern industry in Europe since the decline of feudalism. The interrelations of government policy, financing institutions, scientific discovery, and the spirit of individualism. Prerequisite: 231. Students who wish to study European economic history but do not meet this prerequisite should consider History 181. [3] (Not currently offered)

231. History of Germany in the Twentieth Century. (Formerly 230b) The turbulent history of Germany, as it went from authoritarian state to volatile democracy, to National Socialist dictatorship, to divided country, and to reunification. Special emphasis placed on the Nazi dictatorship, its origins and legacy. No credit for students who have completed 230b. SPRING. [3] Rупieper.

232. History of Modern Italy. Survey of Italian political, socioeconomic, cultural, and colonial history from 1800 to the present. The Risorgimento, national unification, Liberal Monarchy, Fascism, and the Republic. FALL. [3] (Not currently offered)

233. Medieval and Renaissance Italy, 1000–1700. Transformation of Italy from “medieval” society to the “Renaissance.” Cultural, economic, and social developments, especially connections among wealth, status, and patronage. Meaning and applicability of the term “Renaissance.” SPRING. [3] Caferro. (Offered 2001/02)

234. History of France from the Renaissance to the Enlightenment. Social and cultural history from 1515 to 1774. The conditions of life, ambitions, ideas, and tastes of the various social groups in France. The development of the arts, music, and literature in a social and political context. FALL. [3] Crawford.

- 235. Modern France.** From the French Revolution of 1789 to the present. Emphasis on politics, with some attention to the major economic, social, cultural, and intellectual developments. SPRING. [3] Ramsey. (Offered 2001/02)
- 236. France in the Twentieth Century.** Emphasis on politics, from the Popular Front of 1936 to the development of socialist-conservative “cohabitation” under President Mitterrand in the 1980s and early 1990s. Offered in French at the Vanderbilt-in-France program at Aix en-Provence. FALL, SPRING. [3] Kieffer.
- 237. Russia: Tsardom to Empire.** (Formerly 237a) Russian history from fifteenth-century Muscovite state, society, and economy; orthodox Russian culture and religion; Peter the Great and Catherine the Great; eighteenth century absolutism, empire, serfdom, and intellectual life. FALL. [3] Wcislo. (Not currently offered)
- 238. Russia: Old Regime to Revolution.** (Formerly 237b) Russian history from the early nineteenth-century old regime through the Russian Revolution of 1917. Culture, society, and serfdom; the Great Reforms, ideology, and radicalism; industrialization; modernity in an agrarian society; twentieth-century revolutions. [3] Wcislo. (Not currently offered)
- 239. Russia: The U.S.S.R. and Afterward.** (Formerly 238) Russian history since the 1917 Revolution. Overview of the old regime; revolution and civil war; the Soviet “Roaring 20s”; Stalinism and the totalitarianized society; World War II; postwar Soviet society and culture; de-Stalinization and the sixties generation; Gorbachev, perestroika, and disintegration; contemporary history. [3] Wcislo. (Not currently offered)
- 240. Medieval and Early Modern England.** (Formerly 240a) Cultural, political, legal and religious developments in England from its Romano-Celtic antecedents through the seventeenth century. [3] Todd. (Offered 2001/02)
- 241. Culture and Conflict in Modern Britain.** (Formerly 240b) Moments of contention—cultural, political, and social—in Modern Britain (eighteenth century to the present). SPRING. [3] Epstein. (Not currently offered)
- 242. England under the Tudors.** (Formerly 241) Political, religious, and cultural history of England from Henry VII’s accession to the death of Elizabeth I. Emphasis on the Protestant Reformation and its effects; the interaction between monarchy and parliaments; Puritans and other dissenters; Elizabethan literature, drama, art and music; popular culture; and the witch craze. [3] Todd. (Offered 2001/02)
- 243. Britain’s Century of Revolution.** Politics, religion, and culture of the British Isles in the seventeenth century. Analysis of the Civil War, Republic and Cromwellian Protectorate, Restoration, Glorious Revolution, and the political theory sparked by these conflicts, including works of Milton and Marvell, Hobbes and Locke; arts and literature; scientific revolution and intellectual change; witch craze; beginnings of empire. SPRING. [3] Todd. (Not currently offered)
- 245. Victorian England.** Cultural values, liberal reform; urbanization; women and gender; imperialism. FALL. [3] Epstein. (Offered 2001/02)
- 247. Themes in Modern Chinese History.** Intensive reading, discussion, and short papers on selected themes in Chinese social and cultural history. Particular topics vary from semester to semester. May be taken more than once if there is no overlap with a prior offering. FALL. [3] McDaniel. (Not currently offered)
- 248. China in Revolution.** (Formerly 255) Examination of the political, economic, social, and cultural roots for major reform and revolutionary movements in the twentieth century, including the 1911 Revolution, the May Fourth Movement, the Communist takeover, the Cul-

tural Revolution, Democracy Wall, and the Tiananmen student protests. [3] McDaniel. (Not currently offered)

249. History of Modern Japan. (Formerly 257) The political, social, economic, and cultural history of Japan in the nineteenth and twentieth centuries. Radical changes in the state, society, and economy and the effects of these changes on Japan's place in the world. FALL. [3] Igarashi.

250. Cultural and Social History of Japan's Recent Past. Japanese culture and society from the 1930s to the present. Impact of war experiences on postwar Japan, and the political nature of cultural production. SPRING. [3] Igarashi. (Not currently offered)

253. Sub-Saharan Africa: 1400–1800. (Also listed as African American Studies 253) Pre-colonial history of West and Central Africa: the rise of early empires, cultural history of major groups, the spread of Islam, the Atlantic exchange, development of the Atlantic plantation complex, and the slave trade. FALL. [3] Landers. (Not currently offered)

254. Africa since 1800: The Revolutionary Years. (Also listed as African American Studies 254) Political, economic, and social patterns in Sub-Saharan Africa from 1800 to the present. The transition from traditional states and societies, through the colonial interlude and the quest for independence to the modern national setting with its problems of development. Emphasis on the peoples of Nigeria and South Africa. [3] Longwell.

255. The Islamic World to 1798. (Formerly 251) History of the Islamic world, sixth century A.D. to 1798. The rise and spread of Islam as a world empire, a religious system, a cultural-economic network, and a way of life. Historical and literary sources and artifacts. FALL. [3] Messier. (Offered 2001/02)

256. Nationalism and Islam in the Middle East since 1881. (Formerly 252) Secular nationalism and the changing nature of Islamic identification in the Middle East with emphasis on Egypt, Turkey, Iran, and Palestine/Israel. SPRING. [3] Longwell. (Offered 2001/02)

258. Rise of the Iberian Atlantic Empires, 1492–1700. (Also listed as African American Studies 258) Pre-Columbian societies; the formation of the early Spanish state and imperial expansion in the Americas; the formation of multiethnic transatlantic societies. FALL. [3] Landers.

259. Decline of the Iberian Atlantic Empires, 1700–1820. (Also listed as African American Studies 259) Reorganization of the Spanish and Portuguese empires, maturation of transatlantic societies; revolutions for independence. [3] Landers. (Not currently offered)

261. Colonial Mexico. (Formerly 261a) The cultural history of major pre-Columbian groups; the conquest and settlement by the Spaniards; colonial society through independence in 1821. No credit for students who have completed 261a. [3] Landers. (Not currently offered)

262. Modern Mexico. (Formerly 261b) From independence in 1821 to the present. Political instability of the nineteenth century; the Porfirian dictatorship and the revolution of 1910; evolution and modernization of Mexico. [3] Collier. (Not currently offered)

263. Southern South America since 1800. The political, social, and economic history of Argentina, Chile, and Uruguay from the end of colonial times to the present. The formation and consolidation of nation-states; the export booms of 1800–1930; industrial advance and mass politics; military dictatorships and the return to open markets. [3] Collier. (Offered 2001/02)

264. Brazilian Civilization. (Also listed as African American Studies 264) From pre-Columbian times to the present. Class and fusion of Portuguese, Amerindian, and African cultures; sugar and slavery; independence and empire; the coffee economy; race relations;

the search for national identity; industrialization; dictatorship and democracy in the twentieth century. FALL. [3] Eakin.

265. Central America: From Conquest to Revolution. Iberian and Amerindian background, colonial society; independence; growth of the plantation economy; the United States' presence; political and social revolutions in the twentieth century. [3] Eakin. (Not currently offered)

266. Reform and Revolution in Latin America. Comparative analysis of revolutions and reform movements in twentieth-century Latin America focusing on land tenure, social classes, political culture, economic structures, and foreign influences. SPRING. [3] Collier. (Not currently offered)

267. The Frontier in Early America: War and Cultural Interaction. (Formerly 270. Also listed as American and Southern Studies 270) Frontiers in North America, 1500–1763. War, trade, and cultural exchange among the native, British, French, and Spanish residents of North America. The meaning of cultural frontiers and of cycles of peace and war in borderlands. [3] Staff.

268. The English Atlantic World, 1500–1688. (Formerly 271a) English overseas expansion, including conquest of Ireland, exploration and conquest of the New World. Formation of imperial and American cultures and of racism, the slave trade, Indian relations, and migration from the British Isles. [3] Staff.

269. Cultural History of the First British Empire, 1707–1783. (Formerly 271b) The creation of Great Britain; expansion of British overseas interests in America, Africa, Asia, and the Pacific; development of creole cultures; British imperial policy and transatlantic cultures; the American Revolution and growth of antislavery. [3] Staff.

270. The Emergence of American Democracy. (Formerly 272b) The age of Jefferson and Jackson. The second party system, the market revolution, democratic culture, territorial expansion, the slavery crisis and challenges to national unity. [3] Field.

271. The Era of Reform. Reform movements in the United States from 1800 to the 1870s. Antislavery, temperance, feminism, communities, peace, labor, schools, asylums, and penitentiaries. Religious and secular backgrounds, Anglo American links, legacies, and consequences. [3] (Not currently offered)

272. The U.S. in the Era of the Civil War. (Formerly 273) Sectional conflict, secession, the Southern War for Independence, and Reconstruction; 1850–1877. [3] (Not currently offered)

273. The Emergence of Modern America. (Formerly 274a) Industrialization, immigration, and politics; 1877–1916. [3] McSeveney. (Not currently offered)

274. The United States, 1916–1945. (Formerly 274b) American involvement in World War I, war and peace in the 1920s; the Great Depression, the New Deal, and World War II. [3] McSeveney. (Not currently offered)

275. Recent America: The United States since 1945. A general study of the postwar period, with particular attention to the dynamics of social and political change. SPRING. [3] Graham.

276. The Old South. (Formerly 278a) The South's origins in European expansion; the rise of the plantation economy and society, and its identification with slavery; the differing experiences of whites and blacks, planters and nonplanters; the relationship of the region to the larger United States; the Confederate attempt at independence; and the collapse of the slave regime. [3] Carlton.

277. The New South. (Formerly 278b) The aftermath of war and emancipation and the era of Reconstruction; social change and dislocation in the late nineteenth century; the Populist Revolt; the origins of segregation and one-party politics; twentieth-century efforts to modernize the region; the economic, political, and Civil Rights revolutions of the mid-twentieth century; the South in modern American society and politics. [3] Carlton.

278. History of Appalachia. (Also listed as American and Southern Studies 278) The region from first European intrusions to the present. Frontier-era white-indigenous contact, antebellum society and economy, relations with the slave South, the Civil War and postwar politics, increasing social strainings, industrialization and labor conflict, poverty and outmigration. Examination of mountain culture, tourism, and the construction of the "hillbilly" image. SPRING. [3] Carlton. (Not currently offered)

279. African American History to Reconstruction. (Also listed as African American Studies 279) The political, socioeconomic, and intellectual history of African American people from their African backgrounds to the end of Reconstruction. Special emphasis on the institutional history of the African American community. FALL. [3] Dickerson.

280. African American History since Reconstruction. (Also listed as African American Studies 280) The political, socioeconomic, and intellectual history of African American people from the end of Reconstruction to the present. Special emphasis on African American cultural and institutional history and the twentieth-century protest movements. SPRING. [3] Dickerson.

281. The U.S. and the Vietnam War. (Also listed as American and Southern Studies 281) Origins of American involvement, the reasons for escalation, and the Vietnamese response to intervention. The impact on America's domestic politics, the growth of the anti-war movement, and the economic, social, and cultural effects of the conflict. SPRING. [3] Schwartz. (Offered 2001/02)

282. The U.S. and the World. (Formerly 280a) From the winning of independence to the Great Depression. Relationships among foreign policy, ideology, domestic politics, and social and economic change. No credit for students who have completed 280a. FALL. [3] Schwartz. (Offered 2001/02)

283. The U.S. as a World Power. (Formerly 280b) From the origins of World War II, through the Cold War, to the present day. Relationships among foreign policy ideology, domestic politics, and social economic change. No credit for students who have completed 280b. [3] Schwartz.

284. American Social History to 1865. (Formerly 284a) The social causes and consequences of such events as the American Revolution and the Civil War. The impact of industrialization and urbanization on the elite, labor, immigrants, blacks, women, and the family. [3] Doyle.

285. American Social History since 1865. (Formerly 284b) The social causes and consequences of such events as Progressive Reform and the Great Depression. The impact of industrialization and urbanization on the elite, labor, immigrants, blacks, women, and the family. FALL. [3] (Not currently offered)

286. Women's Experience in America: Colonial Times to the Civil War. (Also listed as Women's Studies 286) Women's status in law, politics, and the economy; witchcraft trials and religious deviance; education and domesticity; women's social service and reform projects; early industrial and frontier experiences; the emergence of the women's rights movement. FALL. [3] Staff.

287. Women's Experience in America: The Civil War to the Present. (Also listed as Women's Studies 287) Industrialization; women's reform movements; women's efforts to achieve equality in law, education, politics, and the professions; women's work in the World Wars and the Depression; the emergence of modern feminism. SPRING. [3] Staff.

288. History of American Thought from the Puritans to the Civil War. (Formerly 285a) Basic beliefs and preferences, with special emphasis upon Christian doctrine and political and economic theory. Understanding of the origins of a largely Christian, republican, and capitalist America. FALL. [3] (Not currently offered)

289. History of American Thought since 1865. (Formerly 285b) Basic beliefs and preferences, with special emphasis upon Darwinian theory, the physical sciences, classic American philosophers, and the various and confusing intellectual fashions of the twentieth century. [3] (Not currently offered)

290. Economic History of the United States. (Also listed as Economics 226) Economic development of the United States from the Colonial period to the present. Interrelated changes in economic performance, technology, institutions, and governmental policy. SPRING. [3] Atack.

291. History of American Enterprise. (Also listed as Economics 245) Evolution of the form, organization, and structure of the American business firm from colonial times to the present. Entrepreneurs, labor management, financial capital, distribution, invention, and government regulation. FALL. [3] Carlton.

292. Problems in United States Economic History. (Also listed as Economics 266) Controversies in historical analysis. Prerequisite: Economics 231. Students who wish to study U.S. economic history but do not meet this prerequisite should consider History 290. SPRING. [3] Collins.

293a–293b–293c. Internship. Under faculty supervision, students from any discipline can gain experience in a broad range of public and private agencies, institutions, and programs. In some cases, such as historical societies or museums, history is a central part of the organization's missions; in other cases, the student will play a role in managing the institution's records or writing its history. Two options are available. (1) full-time: 12–15 hours total, including 6–9 hours in 293a, 3 hours in 293b, and 3 hours in 293c. (2) Part-time: 6–9 hours total, including 3–6 hours in 293a and 3 hours in either 293b or 293c. To be accepted for either option, students must have a 2.90 grade point average and 6 hours of prior work in history; they must submit a specific plan for the internship to the Director of Undergraduate Studies. After completing the internship, all students must write a thorough report.

293a. Internship Training. Must be taken Pass/Fail and concurrently with 293a and/or 293b. These hours may not be included in the minimum hours required for the history major. FALL, SPRING. [Variable credit: 3–9]

293b. Internship Research. Students will write a substantial research paper under the supervision of a member of the Vanderbilt History Department. FALL, SPRING. [3]

293c. Internship Readings. Readings and a substantial interpretive essay on topics related to the internship training, under the supervision of a member of the Vanderbilt History Department. FALL, SPRING. [3]

294. Selected Topics in History. FALL, SPRING. [3]

295. Undergraduate Seminar in History. An undergraduate seminar involving advanced reading, research, and writing in a particular area of history. May be taken no more than two times, and not twice from the same professor. Limited to juniors and seniors with preference to history majors. FALL, SPRING. [3] Staff.

296. Independent Study. A program of reading in one field of history to be selected in consultation with an adviser. Normally limited to qualified majors in history. May be taken no more than two times, and not twice from the same professor. Approval of faculty adviser and Director of Undergraduate Studies required. FALL, SPRING. [3]

297. Junior Honors Seminar in History. The first semester of a three-semester sequence of honors study leading to the writing of an honors thesis in history. Introduction to historical thinking, research, and writing. Readings from the major fields of historical scholarship, representing the United States, Europe, Latin America, and Asia. Open to juniors beginning honors work in history, or to qualified history majors with the approval of the director of undergraduate studies. SPRING. [3] Wcislo.

298a–298b. Senior Honors Research Seminar. Presentation and discussion of drafts and chapters of honors theses in progress. Open only to senior honors students. Participants must also register for History 299. Fulfills the requirement of 295 for majors. SPRING. [3] Wcislo.

299. Senior Honors Thesis. Readings of monographs, primary source research, and writing an honors thesis under the supervision of the thesis adviser. Open only to seniors in the departmental honors program who have completed 297. Participants in 299 must also register for 298b. [3–3] Wcislo.

300a–300b. Introduction to Historical Methods and Research. [3–3]

305. Studies in Comparative History. [3]

309. Studies in the Philosophy of History. FALL. [3]

315a. Studies in Early Modern European History. [3]

320a. Studies in European History, 1815–1914. [3]

321. Topics in European History. [3]

324a. Studies in Recent European History. [3]

330a. Studies in German History. [3]

340. Urban History. [3]

343a. Studies in Early Modern Britain. [3]

343b. Seminar in Early Modern Britain. [3]

344a. Studies in Modern England. [3]

344b. Seminar in Modern England. [3]

360. Studies in Imperialism. [3]

365. Seminar in Latin American History. [3]

371a. Studies in Early American History to 1783. [3]

372a. Studies in the Middle Period of American History, 1783–1861. [3]

373a. Studies in United States History, 1861–1900. [3]

374a–374b. Studies in Recent American History. [3–3]

375. Seminar in Recent American History. [3]

378a. Studies in History of the South. [3]

380a. Studies in American Diplomatic History. [3]

381. Topics in American History. [3]

384a. Studies in American Social History. [3]

384b. Seminar in American Social History. [3]

385a–385b. Studies in the Intellectual History of the United States. [3–3]

386a. Studies of Women in the United States. [3]

Honors

1 COURSES designated “Honors” are parts of a special honors program in liberal education. They may be taken only by students who have been appointed College Scholars by the Dean of the College of Arts and Science. Some College Scholars are appointed before they arrive for their first semester in residence; others may be appointed on the basis of their records in that first semester. Students may apply to the Committee on the Honors Program for admission to the College Scholars program; only freshmen are considered for admission. An Honors seminar will satisfy the requirement for a freshman seminar.

Honors seminars for College Scholars provide an especially interesting and challenging way for well-qualified students to complete certain parts of the College Program in Liberal Education. In addition to regular credit hours and grade points, they carry honors points toward graduation with the designation “Honors in the College of Arts and Science.” College Scholars must earn fifteen honors points to receive that designation (they are not required to earn this designation but may take as many honors seminars as they wish). They may earn up to thirteen of the required fifteen points in honors seminars: three each the first time they take Honors 181, 182, 183, 185, or 185a; one if they take a second seminar in the same area or 185b. They may earn three more by taking, as an elective (i.e. not counting toward the College Program), Honors 184, an interdisciplinary seminar that may be taken no more than once for either honors points or credit hours. Single honors points may be earned (a) in honors sections of regular courses, (b) in independent study approved by the Committee on the Honors Program, and (c) in a regular course in which an enriched curriculum approved by the Committee on the Honors Program is pursued. Honors points are only earned for courses in which the student earns the grade *B* or better.

Honors seminars are designed to cover topics through intensive analysis. Honors 181, 182, 183, 185, and 185a–185b count toward the CPLE requirements identified by the seminars’ titles. Honors 181 treats the traditions of human thought and art, the relationships among the various subjects in the humanities, and the importance of humanistic concerns to the daily lives of all thoughtful persons. Honors 182 examines how science advances, what science can and cannot do, the effects of science and technology on human beings, the importance of science in our culture, and the historical effects of scientific theories. Honors 183 treats the relationships among human beings and the diverse structures and institutions of their social environment—the family; religious, social,

economic, and other institutional forms; modern states; and the framework of an international order. Honors 185 and 185a–185b considers some of the fundamental principles that order natural phenomena; the scope, accuracy, and quantitative precision of scientific theories; and the parts played by observation and experiment, deduction, imagination, accident, and influences from the larger society in the development of scientific theories.

Honors 184 seeks to integrate modes of study, understanding, and comprehension employed by the humanities, natural science, and the social sciences. Some of the offerings under Honors 184 may be team-taught.

Honors 181, 181W. College Honors Seminar in the Humanities. FALL, SPRING. [3] Staff.

Honors 182. College Honors Seminar on Science and the World. FALL, SPRING. [3] Staff.

Honors 183. College Honors Seminar in Social Science. FALL, SPRING. [3] Staff.

Honors 184. College Integrative Honors Seminar. May not be taken more than once. FALL, SPRING. [3] Staff.

Honors 185. College Honors Seminar in Basic Science. FALL, SPRING. [3] Staff.

Honors 185a–185b. College Honors Seminar in Basic Science. Three lectures and one laboratory/discussion. 185a is prerequisite to 185b. 185a, SPRING. [4–4] Staff.

Humanities

I INTERDISCIPLINARY courses in the humanities seek to improve the student's understanding of the traditions of human thought and art, of the relationships among the various subjects in the humanities, and of the importance of humanistic concerns to the daily lives of all thoughtful persons. Students take humanities courses to fulfill College Program requirements and on an elective basis. No major in humanities is offered.

The following elective courses are directed by Earl Fitz, Professor of Spanish, Portuguese, and Comparative Literature.

105W. World Drama. (Also listed as Comparative Literature 105W) Representative plays of world literature with an examination of different styles and forms, including diverse formal concepts, and the relation of drama to cultural contexts. FALL, SPRING. [3] Staff.

106W. Literature of Argument and Persuasion. (Also listed as Comparative Literature 106W) Modes of persuasion, focusing on the nature of persuasion and argument in nonfictional discourse. Aristotle's *Rhetoric*, Machiavelli's *The Prince*, Milton's *Areopagitica*, and Woolf's *A Room of One's Own*. FALL, SPRING. [3] Staff.

107W. Literature and the Interpretation of Culture. (Also listed as Comparative Literature 107W) Modes of analyzing contemporary cultural phenomena, including advertisements, films, and novels. One novel (both canonical and popular) and one film are included. FALL, SPRING. [3] Staff.

108W. World Fiction: Short Stories. (Also listed as Comparative Literature 108W) Short fiction from ancient to modern times, and from African, Asian, and European literary tradi-

tions. Concepts of transhistorical value encounter particular historical and social contexts. Aesop, "Anansi" stories, the *Bible*, *Thousand and One Nights*, Cervantes, Diderot, Mansfield. FALL, SPRING. [3] Staff.

115, 115W. Freshman Seminar. [3]

140–141. Great Books of the Western Tradition. (Also listed as Comparative Literature 140–141) Discussion of a selected number of great books from the points of view of literary expression and changing ideologies. 140: classical Greece through the Renaissance. 141: the seventeenth century to the contemporary period. FALL, SPRING. [3–3] Staff.

150–151. Humanities. (Also listed as Comparative Literature 150–151) Analysis and discussion of a selected number of the great works of literature, philosophy, and the arts, representative of the main periods and intellectual movements in Western civilization. The works are studied primarily in relation to the permanent humanistic values of our culture. 150: the Greek, medieval, and Renaissance periods. 151: the modern period from the seventeenth century to the present. 150: FALL. [3] Staff. 151: SPRING. [3] McCarthy (Germanic and Slavic Languages).

156. Images of Women. (Also listed as Comparative Literature 156 and Women's Studies 150) An introduction to the study of images and roles of women in Western society as reflected primarily in literature and art. Readings and discussions will concentrate on modern works that draw for background on Greek and Roman mythology, the *Bible*, medieval and Renaissance materials. FALL, SPRING. [3] Staff.

160–161. Selected Topics. (Also listed as Comparative Literature 160–161) [3–3] (Not currently offered)

175. The Classical Tradition and English Poetry. (Also listed as Classics 175 and Comparative Literature 175) Survey of selected poetic genres, forms, and topics from Homer through Auden. [3] Staff. (Not currently offered)

202. Themes in World Literature. (Also listed as Comparative Literature 202 and Religious Studies 248) Analysis and discussion of major themes in a selected number of the great works of literature, philosophy, and the arts which have been important to civilizations both Western and Eastern from antiquity to 1600. FALL. [3] Staff.

203. Themes in World Literature. (Also listed as Comparative Literature 203) Analysis and discussion of major themes in a selected number of the great works of literature, philosophy, and the arts which have been important to civilizations both Western and Eastern from 1600 to the present. SPRING. [3] Staff.

215. Travel, Adventure, and Discovery in Western Literature. (Also listed as Comparative Literature 215 and English 215) The significance and uses of imaginary travel in the western literary tradition, from the *Odyssey* to the present, with emphasis on the Enlightenment. Topics include scientific discovery, colonialism, and gender. [3] Bowen (French and Italian). (Not currently offered)

224. Dante's Divine Comedy. (Also listed as Comparative Literature 224, English 224, and Italian 224) Reading and analysis of the complete *Inferno* and a study of selected cantos from the *Purgatorio* and *Paradiso*, all in English translation. [3] Franke (French and Italian). (Offered 2001/02)

225. European Realism. (Also listed as Comparative Literature 225 and European Studies 225) Analysis of representative nineteenth-century novels which gave rise to current theories of realism. Balzac, Dickens, Clarín, Galdós, and Dostoevsky. [3] McCarthy (Germanic and Slavic Studies) (Not currently offered)

230. Contemporary Literature of Central Europe. (Also listed as Comparative Literature 230) Fiction in translation from Czechoslovakia, Poland, Hungary, Yugoslavia, and East Germany. Kafka's vision of modernity from the tragic to the absurd, as interpreted by Kafka and his heirs, including Kundera, Schulz, and Schneider. [3] (Not currently offered)

237. Medieval Women in their Own Words. (Also listed as Comparative Literature 237 and Women's Studies 239) European writers from the late classical period through the Middle Ages. Autobiographies, hymns, fictions in poetry and prose with attention paid to ethnic and linguistic difference, cultural background, religious and philosophical ideas. Focus on political influence, personal relations, health and other life concerns, condition in society, and self-perception as writers. SPRING. [3] Barrett.

239. Religious Autobiography. (Also listed as Comparative Literature 239 and Religious Studies 239) The construction of identity in religious autobiography: motivations (personal salvation, witness, proselytism); relationships among self, God, and religious tradition; role of memory; cultural, gender, and religious differences. Readings may include Augustine, Gandhi, Malcolm X, Angelou, Wiesel. SPRING. [3] Geller.

240. Literatures of Africa. (Also listed as Comparative Literature 240) Literatures of Africa, including works originally composed in Arabic and in French, English, or other European languages as well as in various African languages. Cultural variations are emphasized, including differences in linguistic backgrounds and religious beliefs (Islamic, Christian, and indigenous). Texts taught in translation. Authors typically included: Mafouz, Achebe, Ngugi, Soyinka, Djebbar, Sembene. [3] Nzabatsinda (French). (Not currently offered)

265. Theories of Imitation. (Also listed as Comparative Literature 265 and Spanish 265) Classical and Renaissance theories of translation and imitation, as exemplified by sixteenth- and seventeenth-century literature, particularly Spanish pastoral poetry. Readings in the theory of imitation from Aristotle to Borges. Lectures and readings in English. For credit toward the Spanish major, readings and written work must be done in Spanish. [3] (Not currently offered)

278. Colonial and Post-Colonial Literature. (Also listed as Comparative Literature 278 and English 278) Literature from countries colonized by Europe from eighteenth to twentieth century. Examines implications of colonial encounter, and formation of idea "post-colonial" culture. Subjects include language, freedom and agency, gender roles, representation of space, relation between power and narrative. Such authors as: Foster, Coetzee, Okri, Tagore, Chatterjee, Kincaid, Rushdie, Soyinka. [3] (Not currently offered)

284. The Comic Novel. (Also listed as Comparative Literature 284 and English 284) Novels in the European tradition of humorous writing, including works by Rabelais, Cervantes, Fielding, Dickens, Joyce, and Amis. [3] Gottfried (English). (Not currently offered)

294. Special Topics. (Also listed as Comparative Literature 294) Topics of special interest, as announced in the *Schedule of Courses*. Individual courses are at a more advanced level than 160-161 and may have prerequisites. [3]

Interdisciplinary Studies

201. Liberty. Interdisciplinary study of individual, economic, political, and religious liberties, their interrelationships and their role in modern society. Limitations of liberty, nature of a "free society." [3] Lachs (Philosophy), Margo (Economics), Wcislo (History).

Any student who is classified as at least a sophomore and in good standing can earn one credit hour per semester of summer for an internship completed under the designation INDS 280. This course may be taken once or repeated twice for a maximum of three credit hours. As is the case with all internships taken in the College of Arts and Science, students are responsible for obtaining their own internship and faculty adviser. The student and faculty adviser will work together to develop the plan of work for the internship, which must be approved by the Director of Internships in the College (Associate Dean Yollette T. Jones) and the chair of the College Curriculum Committee.

280a–280b–280c. Interdisciplinary Internship. Internship credit for work overseen by the College Curriculum Committee and administered by the chair thereof for independent projects approved in advanced by the relevant department(s). A written scholarly project must be produced in the internship. Course must be taken P/F. [1 credit only per semester; course may be repeated to a total of three credits]

Japanese

SENIOR LECTURER Hideko Shimizu

1 COURSES in Japanese may be taken on an elective basis. Students interested in an interdisciplinary major in East Asian studies may consult the director of the program about the role of Japanese in such a major.

Minor in Japanese Language and Culture

The minor in Japanese Language and Culture requires 19 hours of course work, including Japanese 211, 212, and 241 (Japanese 201 and 202 are not counted toward the minor); and two electives from the following list, with one course from each of A and B.

Group A: East Asian Studies 240 (Current Japan-U.S. Relations), 294a, 294b (Special Topics: by permission of the director of East Asian Studies); 249 (History of Modern Japan); 250 (Cultural and Social History of Japan's Recent Past), Political Science 214 (The Japanese Political System).

Group B: Fine Arts 253 (Japanese Art), 254 (Japanese Painting and Prints); Religious Studies 246 (Religious Traditions in Japan).

The courses that are offered in the CIEE program in Japan may be counted toward the minor.

201–202. Beginning Modern Japanese. Introduction to modern Japanese language including the acquisition of oral-aural skills, basic grammar, and introduction to reading and writing Japanese syllabaries and Chinese characters. [5–5] Shimizu.

211–212. Intermediate Modern Japanese. Emphasis on reading. Also included are syntax, writing, translation, and conversation. Prerequisite: 201–202. [5–5] Shimizu.

241–242. Third-Year Japanese. Readings in contemporary Japanese texts. Advanced conversation and discussion. Prerequisite: 211–212 or equivalent. [3–3] Shimizu.

251–252. Fourth-Year Japanese. Readings in advanced Japanese cultural, literary, and historical texts. Prerequisite: 241–242. [3–3] Shimizu.

289a–289b. Independent Study. A reading course which may be repeated with variable content according to the needs of the individual student. Primarily designed to cover materials not otherwise available in the regular curriculum. FALL, SPRING. [Variable credit: 1–3, not to exceed a total of 12 over a four-semester period] Shimizu.

Jewish Studies

I THE program in Jewish Studies provides the academic background necessary for a basic understanding of Judaic religion and thought. A minor is offered. The minor requires the completion of at least 15 hours distributed as follows:

1. Core Area (9 hours)—at least three courses from the following:
Philosophy 211; Religious Studies 108, 112, 222, 226, 227, 228, 229
2. Comparative Religion (3 hours)—at least one course from the following:
Anthropology 226; Philosophy 242; Religious Studies 131, 140, 202, 234, 235, 237, 248; Sociology 246
3. Elective (3 hours)—one additional course from either #1 or #2 above; or Hebrew 111b (or one course beyond Hebrew 111b for students who come with advanced placement in Hebrew)

Latin American and Iberian Studies

DIRECTOR Jane Gilmer Landers

PROFESSORS EMERITI J. Richard Andrews, John Bingham, J. León Helguera,
C. Enrique Pupo-Walker, Ronald Spores

PROFESSORS Simon Collier, John Crispin, Arthur A. Demarest, Earl E. Fitz,
Leonard Folgarait, Edward Friedman, Thomas A. Gregor, Russell G. Hamilton,
Cathy Login Jrade, William Luis, Andrea Maneschi, Philip D. Rasico,
Francisco Ruiz-Ramón

ASSOCIATE PROFESSORS Victoria A. Burrus, Beth Ann Conklin, Marshall C. Eakin,
William R. Fowler Jr., Wendy A. Hunter, Jane Gilmer Landers, James J. Lang,
John D. Monaghan, Kurt Weyland

ASSISTANT PROFESSORS Francisco Estrada Belli, M. Fráncille Bergquist,
Deborah E. Blom, Edward F. Fischer, Annabeth Headrick, John Janusek,
Andrés Zamora

SENIOR LECTURERS Ramón Jrade, Elena Olazagasti-Segovia, Casilda Rego

I FOR more than thirty years Vanderbilt has shown a concern for and commitment to Latin American studies, becoming one of the first American universities to anticipate the national interest in Latin America. Vanderbilt's Center for Latin American and Iberian Studies seeks to advance fundamental and applied knowledge of Latin American countries through teaching, research, publication, and scholarly exchange. Participating in the specialized teaching and research activities of the Center are the departments of Anthropology, Economics and Business Administration, Fine Arts, History, Political Science, Sociology, and Spanish and Portuguese. The Center faculty has built an invaluable asset in the form of personal and professional contacts in Latin America.

The Center has offered an interdisciplinary program of concentration for undergraduate students since 1973. An honors program is available, and students may participate in Vanderbilt study abroad programs in Argentina, Brazil, Chile, the Dominican Republic, or Spain.

Program of Concentration in Latin American and Iberian Studies

The interdisciplinary major in Latin American and Iberian Studies consists of 42 hours, including:

1. *Language Requirement.* A student must demonstrate ability in both Spanish and Portuguese by demonstrating advanced knowledge of one language and intermediate knowledge of the other. In Spanish, advanced knowledge may be demonstrated by taking Spanish 203 or any course with a higher number. In Portuguese, advanced knowledge may be demonstrated by taking one of the following courses: Portuguese 221, 222, 294. To acquire intermediate knowledge of Spanish requires completion of Spanish 104, Intermediate Spanish; in Portuguese, it requires completion of Portuguese 200, Intermediate Portuguese.

Upon petition, a student may offer a Native American language as a substitute for either Spanish or Portuguese. Nahuatl is offered in the Department of Anthropology. Normally, no more than 6 hours of work in 100-level courses may be counted toward the major. When students take intermediate-level courses in more than one language, however, one course in one of these languages may count toward the major.

2. *Core Area Requirement.* Students are required to complete 21 hours of core area courses, consisting of the following:

- LAS 290, Interdisciplinary Research Methods; LAS 201, Introduction to Latin America; and History 160–161, History of Latin America.
- Three of the following: Anthropology 210, Peoples and Cultures of Latin America or Anthropology 212, Ancient American Civilizations; Economics 222, Latin American Economic Development; Political Science 215, Change in Developing Countries, or Political Science 217, Latin American Politics, or Political Science 228, International Politics of Latin America; Portuguese 221, Culture and Civilization of Portugal, or Portuguese 222, Culture and Civilization of Brazil; Sociology 277, Contemporary Latin America; Spanish 203, Introduction to Spanish and Spanish American Literature, or Spanish 221, Spanish Civilization, or Spanish 223, Spanish American Civilization.

3. *Area of Concentration Requirement.* Students must complete 12 hours from one of the following areas of concentration. Courses that are employed to satisfy the language requirement or the core area requirement may not also count toward the 12-hour area specialization requirement.

History.

258, Rise of the Iberian Atlantic Empires, 1492–1700; 259, Decline of the Iberian Atlantic Empires, 1700–1820; 260, History of Portugal and the Portuguese Empire, 1415–1975; 261, Colonial Mexico; 262, Modern Mexico; 263, Southern South America since 1800; 264, Brazilian Civilization; 265, Central America from Conquest to Revolution; 266, Reform and Revolution in Latin America; 294, Selected Topics in History; 295, Undergraduate Seminar in History; 296, Independent Study in History.

Language, Literature, and Fine Arts.

SPANISH: 203, Introduction to Spanish and Spanish American Literature; 213, Translation and Interpretation; 221, Spanish Civilization; 223, Spanish American Civilization; 230, Development of Lyric Poetry; 231, The Origins of Spanish Literature; 232, Literature of the Spanish Golden Age; 233, Modern Spanish Literature; 234, Contemporary Spanish Literature; 235, Spanish American Literature; 236, Contemporary Literature of Spanish America; 237, Contemporary Lyric Poetry; 239, Development of the Novel; 240, The Contemporary Novel; 244, Afro-Hispanic Literature; 246, Don Quixote; 251, Development of Drama; 252, Contemporary Drama; 260, Development of the Short Story; 289, Independent Study; 293, Contemporary Latin American Prose Fiction in English Translation; 294a–294b, Special Topics.

PORTUGUESE: 221–222 Culture and Civilization of the Portuguese-Speaking World; 289, Independent Study; 294, Special Topics in Portuguese Language, Literature, or Civilization.

NAHUATL: Anthropology 243, Introduction to Nahuatl Language, Culture, and Literature; Anthropology 244, Intermediate Nahuatl Language, Culture, and Literature.

FINE ARTS: 234, Twentieth-Century Mexican Literature, Film, and Art; 245, Art of Pre-Columbian America; 256, The Art of the Maya; 257, Mesoamerican Art; 289, Independent Research; 294, Selected Topics.

Social Sciences.

ANTHROPOLOGY: 210, Peoples and Cultures of Latin America; 212, Ancient Mesoamerican Civilizations; 213, The Archaeology of the Ancient Maya Civilization; 220, Peoples and Cultures of Mexico; 224, Political Anthropology: Crosscultural Studies in Conflict and Power; 226, Myth, Ritual, Belief: The Anthropology of Religion; 245, Art of Pre-Columbian America; 247, The Aztecs; 248, Ancient Empires and Civilizations of South America; 249, Indians of South America; 250, Shamanism and Spiritual Curing; 256, The Art of the Maya; 257, Mesoamerican Art.

ECONOMICS: 222, Latin American Economic Development; 288, Theory and Problems of Development; 291a–291b, Independent Study. Students who successfully complete an Economics course on this list numbered 260 or higher may also receive Area of Concentration credit for successfully completing Economics 231 or 232.

POLITICAL SCIENCE: 215, Change in Developing Countries; 217, Latin American Politics; 218, Social Reform and Revolution; 228, International Politics of Latin America; 287–288, Seminars in Selected Topics; 289a–289b, Independent Research.

SOCIOLOGY: 277, Contemporary Latin America; 291, The Structure of Modern Spanish Society (offered in Madrid); 294, Seminars in Selected Topics; 299, Independent Research and Writing.

Honors Program

Although the Center does not have its own courses for the honors program, a major may enroll in the honors program in one of the departments whose courses are listed in the areas of concentration. Portions of the 42 hours may be taken in the honors program and, in conformity with the general regulations of the College, each student enrolled in this program will be given an examination by a board of the Center faculty, chosen in consultation with the student and the advisers.

Minor in Latin American Studies

The Center for Latin American and Iberian Studies also offers a minor in Latin American Studies. Students must choose a thematic focus and take 15 hours of approved courses with Latin American content distributed as follows:

1. Latin American Studies 201;
2. a minimum of 3 hours of Latin American history;
3. a minimum of 3 hours of relevant work in the social sciences; and
4. a minimum of 3 hours of relevant work in language, literature, and fine arts.

In addition, students must demonstrate language competency in one of the following three ways. Courses taken to satisfy the language requirement may not be counted toward the 15 hours of core courses.

- a. Advanced knowledge in either Spanish or Portuguese. In Spanish, this requires taking one of the following courses: Spanish 203 or any course with a higher number. In Portuguese, this requires taking one of the following courses: Portuguese 221 or 222.
- b. Intermediate knowledge in both Spanish and Portuguese. In Spanish, this requires completing Spanish 104; in Portuguese, it requires completing Portuguese 200. Upon petition, a student may offer a Native American language through the intermediate level as a substitute for either Spanish or Portuguese. Nahuatl is offered in the Department of Anthropology.
- c. Full-time study in the fall or spring semester at Vanderbilt-in-Spain or Vanderbilt-in-Latin America.

Course selection must be approved by the undergraduate adviser of the Center for Latin American and Iberian Studies.

Latin American Studies 115W. Freshman Seminar. [3]

Latin American Studies 201. Introduction to Latin America. A multidisciplinary survey of Latin America from pre-Columbian times to the present emphasizing culture, economic and political patterns, social issues, literature, and the arts in a historical perspective. SPRING. [3] Staff.

Latin American Studies 234. Twentieth-Century Mexican Literature, Film, and Art. (Also listed as Fine Arts 234) The historical, social, and political dynamic as expressed in various art forms. The relation between social reality and aesthetic form. SPRING. [3] Folgarait (Fine Arts).

Latin American Studies 280a–280b. Internship. Under faculty supervision, students gain experience working in a variety of settings, such as civic, corporate, cultural, government, health, media, political, research, and social welfare organizations in the United States and Latin America. Background reading and research will be completed in Latin American Studies 280a concurrently with the completion of internship training, Latin American Studies 280b. A minimum of 3 hours of 280a must be completed, independent of hours taken in 280b. Students may earn up to 6 hours of 280a credit. A research paper and report must be submitted at the end of the semester during which the internship training is completed. A 2.90 grade point average, completion of 6 hours of Latin American Studies, and prior approval of the director of undergraduate students of the student's plans are required.

Latin American Studies 280a. Internship Research and Readings. FALL, SPRING, SUMMER. [Variable credit: 1–6]

Latin American Studies 280b. Internship Training. Offered on a Pass/Fail basis only and must be taken concurrently with 280a. Hours of 280b can not be included in the minimum number of hours counted toward the Latin American Studies major or minor. FALL, SPRING, SUMMER. [Variable credit: 1–9]

Latin American Studies 289a–289b. Independent Study. A program of independent readings or research to be selected in consultation with the Center's undergraduate adviser. Open only to juniors and seniors. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed 12 over a four-semester period]

Latin American Studies 290. Interdisciplinary Research Methods. Principal research methods and sources necessary for the study of Latin America in the social sciences and humanities. FALL. [3] Covington, Landers (History).

Latin American Studies 294a. Special Topics in Latin American Studies. Selected special topics suitable for interdisciplinary examination from the perspective of the social sciences and humanities, as announced in the *Schedule of Courses*. [3]

Linguistics

PROFESSORS Alice Carmichael Harris, Timothy P. McNamara, Philip D. Rasico
ASSOCIATE PROFESSOR Virginia M. Scott
ASSISTANT PROFESSOR M. Francille Bergquist

1 LINGUISTICS is the systematic study of language. It is concerned with the structure of language (the pattern of sounds, the structures of words and sentences) and the general principles governing all natural languages. Courses emphasize analysis of language structures, language in society and culture, history of languages, and the relation between linguistics and anthropology, literature, psychology, and sociology.

Linguistics stands at the crossroads of the humanities and social sciences and provides a broad foundation for liberal education. Students may wish to combine study of linguistics with a major in anthropology, computer science, literature, philosophy, psychology, sociology, or the study of individual languages.

Programs of Concentration in Linguistics

Students may arrange an interdisciplinary pre-professional program in hearing and speech. Interested students should consult Professor Alice C. Harris.

201. Introduction to Linguistics. (Also listed as Anthropology 201) Systematic study and analysis of human language. Formation of language sounds, sound systems, the structure of words, the structure of sentences, meaning, language change. Data from diverse languages of the world. SPRING. [3] Harris.

202. Sociolinguistics. (Also listed as Sociology 202) The social dimension of language use. Variations in language produced by cultural, social class, sex, and age difference and by the occasion of the speech event. [3] (Not currently offered)

203. Anthropological Linguistics. (Also listed as Anthropology 203) Introduction to the study of language in its anthropological context. Topics include theories of the origin of language, prehistory of languages and language groups, the use of vocabulary as a guide to the ways societies classify their universe, and possible deterministic interrelationships between language and culture. [3]

262. Historical and Comparative Linguistics. The study of language change, determination of relations among languages, reconstruction of parent languages, identification of the original speakers of reconstructed languages and their homeland. Emphasis on the Indo-European group, but with examples from other language families. [3]

289a–289b. Independent Readings. [Variable credit: 1–3 each semester, not to exceed a total of 7]

Managerial Studies

The College offers a series of minors in the liberal arts tradition to help students develop skills and perspectives relevant to careers in management. Each minor appeals to students with specific interests and aspirations. Each has a basis in economics, accounting, and statistics. Calculus is prerequisite to the statistics course.

Students interested in professional careers in management or finance typically complete Masters of Business Administration or other professional degrees. Such programs expect students to have had several years of significant work experience before admission. A minor in managerial studies may direct students in their search for appropriate work experience. Minors in individual disciplines like communication studies, economics, sociology, mathematics, or psychology also serve this purpose. The program is directed by William Damon, Professor of Economics.

Minor in Managerial Studies: Financial Economics

The minor in financial economics requires 21 credit hours as follows: Financial Economics 140, Accounting; Economics 150, Economic Statistics (or Math 218 and 218L); Economics 231, Intermediate Microeconomic Theory; and 9 credit hours of electives chosen from the following list of other courses in Financial Economics.

FinEc 220 Managerial Accounting

FinEc 240 Corporate Finance

FinEc 261 Investment Analysis

FinEc 275 Financial Management

Econ 209 Money and Banking

Econ 245 History of American Enterprise

Econ 259 Financial Instruments and Markets

Econ 264 Open Economy Macroeconomics

One semester of calculus is prerequisite to Economics 150, Mathematics 218, and Economics 231. Economics 100 and 101 are prerequisite to the economics courses and to the Financial Economics courses numbered above 220.

Economics 232 is prerequisite to Economics 259 and 264. Economics majors must complete 15 credit hours in Financial Economics in order to complete the minor in financial economics.

Minor in Managerial Studies: Information Systems

The minor in information systems is a joint program of the Department of Economics and the Department of Computer Science. The minor requires 12 credit hours in the department of Economics and at least 11 credit hours in the Department of Computer Science as follows:

Econ 100 Principles of Macroeconomics
Econ 101 Principles of Microeconomics
Econ 150 Economic Statistics or Math 218 Introduction to Mathematical Statistics (and Math 218L Statistics Laboratory)
FinEc 140 Accounting
CS 101 Programming and Problem Solving
CS 201 Program Design and Data Structures
CS 265 Introduction to Database Management

One semester of calculus is prerequisite to Econ 150 (or Math 218 and 218L). Students majoring in Economics must count Econ 100, 101, and 150 (or Math 218 and 218L) towards that major. In order to satisfy the requirement that a minor contain 15 hours not counted for any major, they can complete this minor by taking FinEc 140, the three listed Computer Science courses, and one additional Computer Science course.

Minor in Managerial Studies: Leadership and Organization

The minor in leadership and organization is a joint program of Arts and Science and Peabody College. The minor requires 12 credit hours in the Department of Economics and 12 credit hours in organization and leadership courses in Human and Organizational Development at Peabody as follows:

Econ 100 Principles of Macroeconomics
Econ 101 Principles of Microeconomics
Econ 150 Economic Statistics (or Math 218 Introduction to Mathematical Statistics and Math 218L Statistics Laboratory)
FinEc 140 Accounting
HOD 1200 Understanding Organizations
HOD 1700 Systematic Inquiry
HOD 2700 Leadership in Theory and Practice or HOD 2720 Advanced Organization Theory

And one elective from the following:

HOD 2710 Challenges of Leadership
HOD 2720 Advanced Organization Theory
HOD 2730 Introduction to Human Resources Development
HOD 2740 Human Resource Management

Mathematics

CHAIR Michael L. Mihalik

DIRECTOR OF UNDERGRADUATE STUDIES Richard J. Larsen

DIRECTOR OF GRADUATE STUDIES Mark N. Ellingham

DIRECTOR OF GRADUATE STUDENT TEACHING Jo Ann W. Staples

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Robert L. Hemminger, Ettore F. Infante, Bjarni Jónsson, Charles S. Kahane,

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Michael L. Mihalik, Alexander Ol'Shanskii, Michael D. Plummer, John G. Ratcliffe,

Mark V. Sapir, Larry L. Schumaker, Constantine Tsinakis, Glenn F. Webb, Daoxing Xia

VISITING PROFESSORS Xiaomen Chen, Bjarne Toft

ASSOCIATE PROFESSORS Mark N. Ellingham, Douglas P. Hardin, Mary Ann Horn,

Richard J. Larsen, Marian Neamtu, Eric Schechter, Gieri Simonett, Steven T. Tschantz,

Guoliang Yu

ASSISTANT PROFESSORS Jonathan D. Farley, Peter Jipsen, Boris Okun, Bojan Popov,

Dechao Zheng

SENIOR LECTURERS Albert Bronstein, Zohair Issac, Jo Ann W. Staples

I THE Department of Mathematics offers an undergraduate major with several types of emphasis. Students planning to continue in graduate study may choose an emphasis in pure mathematics. Students with other interests emphasize applied mathematics, statistics, or preparation for teaching. A solid background in mathematics provides an excellent foundation for several professions—many students go on to professional studies in law, medicine, or business.

Program of Concentration in Mathematics

Two programs of concentration are available. Program I is intended for most mathematics majors in the College of Arts and Science and requires a minimum of 32 hours in the department. Program II is intended for students in the School of Engineering who elect a second major in mathematics, but is also available for other students. Program II requires a minimum of 29 hours in the department in addition to 6 hours outside the department. Requirements for the two programs are summarized below.

Program I.

1. A calculus sequence (150a–150b–170a–170b or 155a–155b–175 or 165–175 or 165–205a–205b).
2. Linear algebra (204 or 205a).
3. Differential equations (208).
4. At least four courses from among 200, 210, 214, 215, 218, 219, 221, 223, 226, 229, 234, 240, 242, 247, 248, 250, 253, 259a–259b, 261, or any course above 261.
5. The remainder of the hours must be chosen from courses at the 200 level or above.

Program II.

1. A calculus sequence (155a–155b–175 or 165–175 or 165–205a–205b).
2. Linear algebra (194 or 204 or 205a).
3. Differential equations (198 or 208).
4. At least four courses from the list in item 4 under Program I.
5. The remainder (if any) of the hours required in the department must be chosen from courses at the 200 level or above.
6. At least 6 hours of advanced, mathematically-based science or engineering courses approved by the Director of Undergraduate Studies. This requirement is automatically fulfilled by students who obtain a physics major or a major in the School of Engineering.

Adjustments in these requirements are made for students who begin their college mathematics at an advanced level. If 150a–150b–170a–170b is used as the calculus sequence, the minimum hour requirement is increased to 33 in Program I and to 30 in Program II.

To help students plan their programs, the department offers the following suggestions for those who plan to teach, work in the computer field, emphasize statistics, or go to graduate school. For students planning to teach in secondary school, the department recommends Math 218, 231, 240, and 252. The programs of students planning to work in the computer field should include 226 with 198, 218, (or 247–248), 274, and 286 strongly recommended; computer courses should be selected in consultation with the student's adviser (the student is reminded that credit in these courses does not count toward a mathematics major). Programs in statistics should be planned in consultation with Associate Professor Richard J. Larsen. Preparation for graduate work in mathematics should include at least 12 hours from 272a–272b, 283a–283b, 290, 330a.

Minor in Mathematics

The minor in mathematics requires completion of 175 or 170b and an additional 12 hours in the department as follows:

1. Linear algebra (194 or 204 or 205a).
2. Differential equations (198 or 208).
3. Six hours chosen from courses at the 200 level or higher.

Honors Program

The Department of Mathematics offers honors work for qualified majors. To enroll in the honors program, a student should normally apply at the time of declaration of the major. Honors students include independent study in their schedules, and they are required to submit a senior thesis. The department may be consulted for further details.

Licensure for Teaching

Candidates for teacher licensure at the secondary level in mathematics should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

Students who have credit for any course numbered 140 or above may not receive credit for any of the courses 127a, 127b, 133 without departmental approval.

Precalculus courses (100–139)

127a–b. Probability and Statistical Inference. (Formerly 127–128) A survey of probability models and statistical inference for students not planning to major in science or mathematics. Emphasis is on applications of statistical techniques. Discrete probability models, sampling theory, confidence intervals, hypothesis testing, correlation and regression, chi-square tests. 127a is a prerequisite for 127b. [3–3] Larsen.

133. Pre-calculus Mathematics. Designed for students who plan to take either 150a–150b or 155a–155b but need a stronger background in algebra and trigonometry. Topics include inequalities, functions, graphs, trigonometric identities, and theory of equations. FALL, SPRING. [3] Staff.

Several calculus sequences are available: 140; 150a–150b–170a–170b; 155a–155b–175. They differ in content and credit hours, and students should not switch from one to another without approval of the department. Such switching may result in withdrawal of credit.

Calculus courses (140–179)

140. Survey of Calculus. (Formerly 170) A basic course in the rudiments of analytic geometry and differential and integral calculus with emphasis on applications. Designed for students who do not plan further study in calculus. FALL, SPRING. [4] Hardin.

150a–150b. First-year Calculus. (Formerly 171a–171b) 150a: functions, limits, differentiation of algebraic functions, applications of differentiation, integration. 150b: differentiation and integration of transcendental functions, methods of integration. FALL, SPRING. [3–3] Staff.

155a–155b. First-year Accelerated Calculus. (Formerly 172a–172b) 155a: functions, limits, differentiation of algebraic functions, integration, applications including extrema problems, areas, volumes, centroids, and work. 155b: differentiation and integration of transcendental functions, applications, methods of integration, coordinate geometry, polar coordinates, infinite series. FALL, SPRING. [4–4] Staff.

165. Honors Mathematics I. (Formerly 193) An intensive course designed for freshmen with high aptitude and achievement, who already have some background in calculus. Topics include axioms of the real number system, limits, integrals, transcendental functions, polar coordinates, sequences, and infinite series. FALL. [4] (Not currently offered)

170a–170b. Second-year Calculus. (Formerly 221a–221b) Analytic geometry, polar coordinates, infinite series, vectors, parametric equations, vector analysis, partial differentiation, and multiple integrals. Prerequisite for 170a: 150b. 170a FALL, SPRING; 170b SPRING. [3–3] Staff.

175. Second-year Accelerated Calculus. (Formerly 222) Indeterminate forms, solid analytic geometry, vectors in three space, partial derivatives, multiple integrals. Prerequisite: 155b or equivalent. FALL, SPRING. [3] Staff.

Post-calculus courses (180–209)

180. Fundamentals of Probability and Statistics. Combinatorics, laws of probability, regression analysis, normal curves, the Z transformation, probability as an integral, discrete and continuous probability models, principles of hypothesis testing, statistical methods (goodness-of-fit tests, t tests, introduction to the analysis of variance, χ^2 tests). Does not count toward a major in mathematics. Prerequisite: 140, 150a, or 155a. SPRING. [3] Issac.

194. Methods of Linear Algebra. (Formerly 230) Vectors and matrix operations. Linear transformations and fundamental properties of finite dimensional vector spaces. Numerical solutions of systems of linear equations. Eigenvalues and eigenvectors. Some basic elements of linear programming. No credit for students who have completed 204 or 205a. Corequisite: 170b or 175. FALL, SPRING. [3] Staff.

198. Methods of Ordinary Differential Equations. (Formerly 229) Linear first-order differential equations, applications, higher order linear differential equations, complementary and particular solutions, applications, Laplace transform methods, series solutions, numerical techniques. Prerequisite: 170b or 175 or consent of department. Credit is not given for both 198 and 208. FALL, SPRING. [3] Staff.

One year of calculus is prerequisite to all courses numbered above 200.

200. Intensive Problem Solving and Exposition. (Formerly 258) Intended to develop widely applicable mathematical skills. Focus on use of basic principles such as induction, the pigeonhole principle, symmetry, parity, and generating functions. Prerequisite: one year of calculus and consent of instructor. [3] (Not currently offered)

204. Linear Algebra. (Formerly 237) Algebra of matrices, real and complex vector spaces, linear transformations, systems of linear equations. Eigenvalues, eigenvectors, Cayley-Hamilton theorem. Inner product spaces, orthogonal bases. Hermitian matrices. Designed primarily for mathematics majors. No credit for students who have completed 194 or 205a. Corequisite: 170b or 175. FALL, SPRING. [3] Staff.

205a. Honors Mathematics II. (Formerly 223) An introduction to linear spaces, bases, dimension, inner product spaces, linear transformations, matrix algebra, determinants, systems of linear equations, eigenvalues, eigenvectors, Hermitian and unitary transformations, quadratic forms. SPRING. [4] (Not currently offered)

205b. Honors Mathematics III. (Formerly 224) Calculus of n-space, partial and directional derivatives, gradients, chain rule, implicit functions, extrema and saddle points, line integrals and applications, potential functions, multiple integrals, Green's theorem, surface integrals. Stokes' theorem, series, uniform convergence. [4] (Not currently offered)

208. Introduction to Ordinary Differential Equations. (Formerly 247) First- and second-order differential equations, applications, linear differential equations, series solutions, boundary-value problems, existence and uniqueness theorems. This course is intended for mathematics and advanced science majors. Prerequisite: linear algebra, and 170b or 175 or equivalent. Credit is not given for both 198 and 208. FALL, SPRING. [3] Staff.

Intermediate undergraduate courses (210–239)

210. Axiomatic Geometry. (Formerly 227) Hilbert's axioms, neutral geometry, Euclidean geometry, independence of the Parallel Postulate, non-Euclidean geometry. The theory developed axiomatically. Emphasis on rigorous mathematics proofs. Prerequisite: 170b or 175. SPRING. [3] Hughes.

214. Discrete Structures. (Formerly 212; also listed as Computer Science 212) A broad survey of the mathematical tools necessary for an understanding of computer science. Topics covered include an introduction to sets, relations, functions, basic counting techniques, permutations, combinations, graphs, recurrence relations, simple analysis of algorithms, O-notation, Boolean algebra, propositional calculus, and numeric representation. Prerequisite: One course in computer science or two semesters of calculus. FALL, SPRING. [3] Staff.

215. Discrete Mathematics. (Formerly 213) Elementary combinatorics including permutations and combinations, the principle of inclusion and exclusion, and recurrence relations. Graph theory including Eulerian and Hamiltonian graphs, trees, planarity, coloring, connectivity, network flows, some algorithms and their complexity. Selected topics from computer science and operations research. Prerequisite: linear algebra. FALL. [3] (Offered 2001/02)

218. Introduction to Mathematical Statistics. (Formerly 233) A survey of probability and applied and mathematical statistics. Discrete and continuous probability models, mathematical expectation, laws of large numbers, point estimation, confidence intervals, hypothesis testing, nonparametric techniques, applications. Students taking 218 are strongly urged to take 218L concurrently. Prerequisite: 155b or 170a or consent of instructor. FALL, SPRING. [3] Larsen and staff.

218L. Statistics Laboratory. (Formerly 233L) Applications of the theory developed in 218. Emphasis on data analysis and interpretation. Topics covered include the one- and two-sample problems, paired data, correlation and regression, chi-square, model building. Examples are drawn from many disciplines. Corequisite: 218 or equivalent. FALL, SPRING. [1] Larsen.

219. Introduction to Applied Statistics. (Formerly 234) A brief review of basic applied statistics followed by a development of the analysis of variance as a technique for interpreting experimental data. The generalized likelihood ratio principle, completely randomized designs, nested designs, orthogonal contrasts, multiple comparisons, randomized block designs, Latin squares, factorial designs, 2^n designs, fractional factorials, confounding, introduction to response surface methodology. Applications will be emphasized. Prerequisite: 218 or equivalent. SPRING. [3] Larsen.

221. Theory of Numbers. (Formerly 235) The Euclidean algorithm, Euler's phi function, simple continued fractions, congruences, Fermat's theorem, Wilson's theorem, and elementary Diophantine equations. FALL, SPRING. [3] Staff.

223. Concepts of Abstract Algebra. (Formerly 231) Fundamental properties of integers and polynomials. Elementary properties of groups, rings, integral domains, and fields and lattices. FALL, SPRING. [3] Staff.

226. Introduction to Numerical Mathematics. (Formerly 248; also listed as Computer Science 255) Numerical solution of linear and nonlinear equations, interpolation and polynomial approximation, numerical differentiation and integration, least-squares curve fitting and approximation theory, numerical solution of differential equations, errors and floating point arithmetic. Application of the theory to problems in science, engineering, and economics. Student use of the computer is emphasized. Prerequisite: computer programming and linear algebra. FALL, SPRING. [3] Staff.

229. Advanced Engineering Mathematics. (Formerly 246) Vector analysis including directional derivatives, transformation of coordinates, divergence and curl. Line integrals, surface integrals, divergence theorem. Stokes' theorem. Functions of a complex variable, including limits, derivatives, Cauchy-Riemann equations, exponential, trigonometric, hyperbolic, and logarithmic functions. Complex integrals, Cauchy's integral theorem and formula. Taylor and Laurent series. Calculus of residues. Prerequisite: ordinary differential equations. SPRING. [3] Ahner.

234. Methods for Initial and Boundary-Value Problems. (Formerly 245) Construction of the solutions to initial- and boundary-value problems for partial differential equations using separation of variables in conjunction with Fourier series and integrals. Emphasis on obtaining explicit formulas for the solutions of various problems involving the heat equation, the wave equation, and Laplace's equation. Prerequisite: elementary differential equations. Recommended: linear algebra. FALL, SPRING. [3] Xia.

Advanced undergraduate courses (240–269)

240. Transformation Geometry. (Formerly 271) Transformations of the plane, groups of transformations, reflections, glide reflections, classification of the isometries of the plane, frieze groups, analysis of frieze patterns, wall paper groups, and analysis of wall paper patterns. Especially recommended for prospective teachers of mathematics. Prerequisite: linear algebra. FALL. [3] Ratcliffe.

242. Topology of Surfaces. (Formerly 240) Fundamental concepts of topology, including properties of continuity, compactness, and connectivity. Topology of surfaces, triangulations, and the fundamental group. Introduction to basic ideas of graph theory, vector fields, and Euclidean and hyperbolic geometry. FALL. [3] Hughes.

247. Probability. (Formerly 254) Combinatorics, probability models (binomial, Poisson, normal, gamma, etc.), stochastic independence, generating functions, limit theorems and types of convergence, bivariate distributions, transformations of variables. Markov processes, applications. Prerequisite: a firm background in intermediate calculus including partial derivatives and multiple integrals. Except for students with extremely strong backgrounds, 218 should be taken prior to 247. FALL. [3] Bronstein.

248. Mathematical Statistics. (Formerly 255) Distribution theory, order statistics, theory of point estimation and hypothesis testing, normal univariate inference, Bayesian methods, sequential procedures, regression, nonparametric methods. Students interested in applications may take 218L. Prerequisite: 247. SPRING. [3] Bronstein.

250. Introduction to Mathematical Logic. Development of the first order predicate calculus and fundamental metamathematical notions. FALL, SPRING. [3] Schechter and staff.

252. History of Mathematics. (Formerly 260) The major developments of mathematics from ancient times to the early part of this century. Emphasis both on historical perspective and on the mathematics; assignments include many exercises and theorems. Prerequisite: completion of 170b or 175 or their equivalent and some algebra (preferably both linear algebra and abstract algebra) or consent of instructor. Especially recommended for teacher candidates. FALL. [3] Issac.

253. Error-correcting Codes. (Formerly 232) The algebraic theory of error-correcting codes for information transmission. Block codes, the binary symmetric channel, length, rate and distance. Linear codes, bounds, syndrome decoding, perfect codes, Reed-Muller codes. Cyclic, BCH, and Reed-Solomon codes. Prerequisite: linear algebra. SPRING. [3] Ellingham.

259a–259b. Advanced Calculus. (Formerly 261a–261b) Calculus of functions of several variables, differentiability, implicit functions, extrema, line integrals, surface integrals, theorems of Green, Gauss, Stokes; topology of the line, uniform continuity, theory of integration, infinite series, uniform convergence, power series, improper integrals. [3–3] Ahner.

261. Complex Variables. (Formerly 259) Study of complex numbers, analytic and elementary functions, transformations of regions, properties of power series, including Taylor's and

Laurent's. The calculus of residues with applications, conformal mapping with emphasis upon boundary value applications. Prerequisite: 198 or 208. SPRING. [3] Simonett.

267. Selected Topics for Undergraduates. Topics of special interest at a level suitable for undergraduates, as announced in the *Schedule of Courses*. FALL, SPRING. [Variable credit: 1–3, total of all 267 and 297 courses not to exceed a total of 12]

269. Senior Thesis. (Formerly 295) A written presentation of research results, original for the student but not usually original in the larger sense. The regulations governing the writing of a Master of Arts thesis in mathematics will apply to the writing of the senior thesis. FALL, SPRING. [3] Staff.

Introductory graduate or advanced undergraduate courses (270–299)

270. Differential Geometry. (Formerly 268) Curvature, torsion, vector fields, and the Frenet formulas for curves in R^3 . Review of continuity and differentiation in R^n , Stokes' theorem and applications, fundamental forms and the shape operator, geodesics, and Gaussian curvature for surfaces in R^3 . The Euler characteristic and the Gauss-Bonnet theorem. Prerequisite: 259a or equivalent. SPRING. [3] (Offered 2001/02)

272a–272b. Topology. (Formerly 276a–276b) 272a: Connectedness, compactness, countability, and separation axioms. Complete metric spaces. Function spaces. 272b: The fundamental group and covering spaces. Topology of surfaces. Simplicial complexes and homology theory. Homotopy theory. Prerequisite: 242. [3–3] Mihalik.

274. Introduction to Combinatorics. (Formerly 280) Elements of enumerative analysis including permutations, combinations, generating functions, recurrence relations, the principle of inclusion and exclusion, and Polya's theorem. Some special topics will be treated as class interest and background indicate (e.g., Galois fields, theory of codes, and block designs). SPRING. [3] Plummer.

275. Graph Theory. (Formerly 273) An introduction to basic concepts and theorems in graph theory with applications. Path problems, matching theorems, planar graphs and Kuratowski's theorem. Ramsey's theorem, directed graphs, network flow, and the four-color problem and other unsolved problems. Prerequisite: linear algebra. FALL. [3] Ellingham.

280. Set Theory. (Formerly 269) The basic operations on sets. Cardinal and ordinal numbers. The axiom of choice. Zorn's lemma, and the well-ordering principle. Introduction to the topology of metric spaces, including the concepts of continuity, compactness, connectivity, completeness, and separability. Product spaces. Applications to Euclidean spaces. Strongly recommended for beginning graduate students and for undergraduates who plan to do graduate work in mathematics. Prerequisite: intermediate calculus and linear algebra. [3] (Not currently offered)

283a–283b. Modern Algebra. (Formerly 281a–281b) 283a: Group theory through Sylow theorems and fundamental theorem of finitely generated abelian groups. 283b: Introductory theory of commutative rings and fields, and additional topics such as Galois theory, modules over a principle ideal domain and finite dimensional algebras. Prerequisite: linear algebra. An elementary course in modern algebra (e.g., 223) is strongly recommended. [3–3] Farley.

284. Lattice Theory and the Theory of Ordered Sets. An introduction to basic concepts and theorems in lattice theory and the theory of ordered sets with connections to universal algebra and computer science. Boolean algebras, modular and distributive lattices,

ordered topological spaces, algebraic lattices and domains, fixed point theorems, cosets, free lattices. Prerequisite: 223 or equivalent. [3] McKenzie.

286. Numerical Analysis. (Formerly 270) Finite difference and variational methods for elliptic boundary value problems, finite difference methods for parabolic and hyperbolic partial differential equations, and the matrix eigenvalue problem. Student use of the computer is emphasized. Prerequisite: 226 or consent of instructor. FALL. [3] (Offered 2001/02)

287. Nonlinear Optimization. An introduction to modeling, theory and methods for nonlinear optimization problems. Modeling of application problems in science and engineering. Methods of unconstrained optimization with one and several variables. Theory of constrained optimization, including Carwash-Kuhn-Tucker conditions. Penalty functions and other methods of constrained optimization. Computer tools such as a subroutine library or symbolic algebra system. Prerequisites: Multi variable calculus, linear algebra and computer programming. SPRING. [3] Ellingham.

288. Linear Optimization. (Also listed as Computer Science 257) An introduction to linear programming and its applications. Formulation of linear programs. The simplex method, duality, complementary slackness, dual simplex method and sensitivity analysis. The ellipsoid method. Interior point methods. Possible additional topics include the primal-dual algorithm, cutting planes, or branch-and bound. Applications to networks, management, engineering, and physical sciences. Prerequisites: linear algebra and computer programming. FALL. [3] Ellingham.

290. Introductory Analysis. (Formerly 265) Sets, functions, sequences and series of real numbers, limits, continuous functions, foundations of calculus, sequences and series of real-valued functions. Designed for students interested in a rigorous approach. Prerequisite: elementary calculus. FALL. [4] Schechter.

292a–292b. Methods of Mathematical Physics. (Formerly 262a–262b) Hermitian forms, unitary transformations, group representations. Vector analysis, elements of differential geometry. Functions of a complex variable, calculus of residues, asymptotic expansions. Ordinary and partial differential equations of mathematical physics, boundary value problems, eigenfunction expansions. Integral equations, Hilbert space methods. Special functions, asymptotic properties. Integral transforms, generalized functions. Prerequisite: ordinary differential equations and linear algebra. [4–4] (Not currently offered)

294. Partial Differential Equations. (Formerly 263) Classification of equations: equations of elliptic, parabolic, and hyperbolic type. Separation of variables, orthonormal series, solutions of homogeneous and nonhomogeneous boundary value problems in one-, two-, and three-dimensional space. Possible additional topics include subharmonic functions and the Perron existence theorem for the Laplace equation of Sturm-Liouville theory. Prerequisite: 198 or 208. FALL. [3] Ahner.

297. Selected Topics. (Formerly 294) Topics of special interest, as announced in the Schedule of Courses. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed a total of 12]

298. Independent Study. (Formerly 289a–289b) Reading and independent study in mathematics under the supervision of an adviser. Designed primarily for honors candidates, but open to others with approval by department chair. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed 6 without departmental permission]

Graduate courses (300–399)

- 312. Algebraic Topology.** [3]
323. Universal Algebra. [3]
330a–330b. Theory of Functions of a Real Variable. [3–3]
331a–331b. Theory of Functions of a Complex Variable. [3–3]
333. Theory of Ordinary Differential Equations. [3]
334. Theory of Partial Differential Equations. [3]
362a–362b. Functional Analysis. [3–3]
364a–364b. Nonlinear Differential Equations and Analytical Dynamics. [3–3]
367. Selected Advanced Topics. [3]
368. Advanced Independent Study. [3]
372a–372b. Seminar in Topology. [Variable credit: 1–3 each semester]
375a–375b. Seminar in Graph Theory. [Variable credit: 1–3 each semester]
381a–381b. Seminar in Number Theory. [Variable credit: 1–3 each semester]
383a–383b. Seminar in Algebra. [Variable credit: 1–3 each semester]
386a–386b. Seminar in Computational Mathematics. [Variable credit: 1–3 each semester]
390a–390b. Seminar in Analysis. [Variable credit: 1–3 each semester]
394a–394b. Seminar in Applied Analysis. [Variable credit: 1–3 each semester]
395a–395b. Seminar in Mathematical Biology. [Variable credit: 1–3 each semester]
398. Directed Study. [Variable credit: 1–3 each semester]

Molecular Biology

See Biological Sciences

Music

The BLAIR School of Music offers a wide range of opportunities for the study of music to students in the College of Arts and Science. The Blair faculty has an established reputation in performance, research, composition, and teaching. Faculty members are published and have recorded on a wide variety of labels; faculty soloists and Blair resident ensembles perform nationally and internationally and give frequent concerts on campus.

Liberal Arts Courses

Courses in music literature and history, dance history, and music theory are taught by Blair faculty and are listed below. They are offered for liberal arts credit and may be counted without limit toward degrees offered by the College.

Courses for Professional Credit and Blair Performing Ensembles

Designated courses in keyboard harmony (MUSC 131a–131b, 132a–132b, 133a–133b), computer music (MUSC 216), music theory (MUSC 100, 120a–120b, 121, 121e, 122, 122e, 220, 221, 222, 224, and 225), composition (MUSC 230), conducting (MUSO 261), diction for singers (MUSO 159a–159d), instrumental seminars (MUSO 151, 152, 153), orchestral repertory (MUSO 251, 252, 253a, 253b, 254a–254b), group performance (MUSP 102a–102b through 107a–107b), and individual performance (MUSP 171–191) are available to students in the College as professional credit. Descriptions appear in the Blair section of this catalog. Only six hours of such professional work may be counted toward the Bachelor of Arts degree; there is no limit on professional credit under the Bachelor of Science degree.

Several Blair vocal and instrumental performing ensembles (MUSE 101a, 101b, 101e, 101f, 171, 201a, 201c, 201d, 201e, 201f, 201g, 201L, 201w, 202a, 202b, 202c, 202d, 203, 204, 205, 206, 207, 208, 210, 211, 212, and 299) are also offered for credit. They are described in the Blair section of this catalog.

Students are advised to consult the registrar of the College to clarify any questions about credit.

Major in Music

A liberal arts major in music is offered for students seeking the Bachelor of Science degree. The major requires a minimum of 26 hours in academic course work and at least 4 hours in performance and 2 semesters of ensemble; it must be taken as a second major. Required courses for this major that are available for professional credit to students in the College are described in the Blair section of this catalog.

Requirements in music theory are MUSC 121, 121e, 122, 122e, 220, and 221. These courses must be taken in sequence. Advanced Placement credit for 121 would allow the inclusion of other theory courses to fulfill the 12-hour theory requirement.

Requirements in music literature and history are MUSL 141, 242, 243, and 244, with MUSL 141 prerequisite to all other courses. Advanced Placement credit for 141 would allow the inclusion of other literature/history courses to fulfill the 12-hour requirement.

At least one elective course in either theory, literature/history, or conducting (chosen from MUSC 191, 222, 224; MUSL 144, 145, 147, 148, 149, 160, 170, 171, 183, 200, 218, 247, 249, 264, 294; MUSO 261) is required.

Requirements in performance include 4 hours (four semesters) of individual instruction in any orchestral instrument, piano, organ, classical guitar,

saxophone, euphonium, or voice. Students must meet minimum performance standards for admission to the program; the required 4 hours of individual instruction are at a level above that minimum. Representative repertoire lists reflecting minimum performance standards are available from the Blair registrar or the coordinator of the program, Professor Carl Smith, Blair School of Music. Also required is 2 hours (participation for two semesters) in a Blair performing ensemble as assigned, following audition by a faculty committee. Ensemble openings at mid-year are not assured.

Minors in Music

Three minors in music are offered for students seeking the Bachelor of Science degree. Students may elect to pursue only one of these minors according to their individual interests.

The minor in music requires 24 hours of course work in music theory, music literature/history, and performance. Required are MUSC 120a–120b or MUSC 121–122 and 121e–122e (6 hours); MUSL 140 or 141 (3 hours); three courses chosen from MUSC 191, MUSL 115W, 144, 145, 147, 148, 160, 170, 171, 183, 200, 218, 242, 243, 244, 247, 249, 264, and 294 including at least one 200–level course (9 hours); four semesters of individual performance instruction (4 hours); and participation for two semesters (2 hours) in a Blair ensemble as assigned, following auditions by a faculty committee.

The minor in music history requires 18 hours of course work in music theory and music literature and history. Required are MUSC 120a–120b or MUSC 121–122 and 121e–122e (6 hours) and MUSL 141, 242, 243, and 244 (12 hours). Students who have completed MUSL 140 must substitute another course for MUSL 141 chosen from MUSL 144, 145, 147, 148, 149, 160, 170, 171, 183, 200, 218, 247, 249, 264, and 294.

The minor in music performance requires 26 hours of course work in music theory, music literature/history, and performance. Required are MUSC 120a–120b or MUSC 121–122 and 121e–122e (6 hours) and MUSL 140 or 141 (3 hours); one course chosen from MUSL 144, 145, 147, 148, 160, 170, 171, 183, 200, 218, 242, 243, 244, 247, 249, 264, 294 and MUSC 191 (3 hours); 12 hours of individual performance instruction with at least 6 semesters of study. Students must meet minimum performance standards for admission to the program; the required 12 hours are a level above that minimum. Representative repertoire lists reflecting minimum performance standards are available from the Blair registrar or the advisers for the program, Professors Maureen Needham, Crystal Plohman, and Pam Schneller, Blair School of Music. (Plohman advises students with last names A–G; Needham, H–M; Schneller, N–Z.) Students must participate for at least two semesters (2 hours) in an appropriate Blair performing ensemble as assigned, following auditions before a Blair faculty committee. Ensemble openings at mid-year are not assured.

Honors in Music Literature

The honors program in music literature and history is designed to afford superior students the opportunity to pursue more intensive work within the field of musicology or ethnomusicology. The course of study includes seminar work as well as independent study and writing under the supervision of a thesis adviser. Students who want to do honors work should contact the chair of the musicology department in the fall of their junior year. (3.0 GPA overall; 3.30 in all courses taken under the Music Literature and History (MUSL) designation.)

Students accepted into the program must take a total of 9 credit hours: MUSL 294, Selected Topics in Music History (3 hours), and MUSL 299a–299b, Senior Honors Thesis (6 hours). In addition, successful completion of the honors program requires an oral defense of the honors thesis before a faculty committee. This defense will occur at the end of the spring semester of the senior year. Those enrolled in the program who successfully complete its requirements may graduate with Honors or High Honors in music literature and history.

DANC 110. Introduction to the Dance. Survey of religious, social, and theatrical dance forms, dating from ancient Greek Dionysian dances to the avant-garde dance of the 1960s. Readings, video and film research, and study of live performance. [3] Needham. (Not currently offered)

DANC 111. History of Ballet and Modern Dance. Dance styles from the Romantic period to the present. Emphasis on world-wide diffusion of the Russian ballet and the avant garde. Readings, video and film research, and study of live performance. [3] Needham. (Offered 2000/01)

DANC 112. Dance in American Culture. Popular American dance forms from the seventeenth century to the present. Sacred dances of American Indians, history of ballroom dancing, and the emerging dominance of African American social dances. Readings, video and film research, and study of live performance. FALL. [3] Needham. (Offered 2001)

DANC 113. Theatrical Dance in America. Development of original American theatrical dance forms: modern dance, classical ballet, Hollywood musical, and African American jazz dance. Readings, video and film research, and study of live performance. FALL. [3] Needham. (Offered alternate years)

DANC 114. Dance Roots: Black Dance in America. African American dance traced from its African roots to Broadway, concert dance, and Hollywood movies. The history of jazz, jitterbug, hip-hop, and other American popular dance forms. African American pioneers of concert dance. Discussion, readings, films, live performance, and guest speakers. SPRING. [3] Needham.

DANC 210. The Female Dancing Body. Historical views of the body, dance, and gender. Theoretical and analytical interpretations of the female dancer as an object of desire. Topics include body control, empowerment, pleasure, otherness, and the contemporary female choreographer. Lectures, readings, film, live performances. SPRING. [3] Needham. (Offered 2001)

MUSC 105. The Romantic Generation. An exploration of outstanding works by Berlioz, Chopin, Liszt, Mendelssohn, and Schumann (all born between 1803 and 1810). Focus on structural analysis, stylistic innovations, mutual music influences, and relations to classical

models. Investigations into the meanings of musical Romanticism. [3] Michael Rose. (Offered alternate years)

MUSC 106. Musical Nationalisms. Selected works by nineteenth- and twentieth-century Western composers of various nationalities who draw on folk and ethnic sources for their aesthetic principles and compositional techniques. [3] Michael Rose. (Offered alternate years)

MUSC 107. Beethoven and The Beatles. An analytical study of the music of Beethoven and the Beatles in their cultural contexts. Focus on analogous stylistic issues of consolidation and innovation. For students without formal training in music theory. Does not count toward a major or minor in music. SPRING. [3] Michael Rose. (Offered 2001/02)

MUSC 116. Discovering Music Creatively: Composition for the Novice. An investigation of the creative act through guided projects in composition, listening, reading, and discussion. Selected fundamental elements of music applied to aesthetically sophisticated creative projects modeled on concert music from Debussy to Cage to the present. Designed for students with little or no technical training in music. Prerequisite: Any MUSC or MUSL course. Not open to majors or minors in music. [3] Kurek. (Not currently offered)

MUSC 118. Mozart. The music of Wolfgang Amadeus Mozart. Techniques for listening to different genres of classical music. Emphasis on style and structure, music theory and history, and Mozart's life and character. No musical background assumed. [3] Michael Rose.

MUSC 119. Motive, Counterpoint, and Structure: Bach, Brahms, and Bartok. Analysis of the compositional techniques shared by all three composers. For students without formal training in music theory. [3] Michael Rose. (Offered alternate years)

MUSC 191. Sonata Forms. An analytical survey of sonata form in works by Classical, Romantic, and Modern composers. Emphasis on structural listening, not score reading. Prerequisite: At least one course from MUSC 105, 106, 107, 118, 119, MUSL 140, 141, 144, 183. [3] Michael Rose. (Offered alternate years)

MUSL 115W. Freshman Seminar. [3]

MUSL 140. Introduction to Music Literature. An introduction to the literature of music from A.D. 600 to the present through a study of selected works. Extensive listening is required. Not open to students who have taken 141. Does not count toward a major in music. FALL, SPRING. [3] Hime, Lowe.

MUSL 141. Survey of Music Literature. A historical and analytical survey from A.D. 600 to the present. Designed for music majors and minors and others with appropriate musical background. Emphasis on aural analysis and score study of selected masterworks. Not open to students who have completed 140. FALL, SPRING. [3] Barz, Cyrus, Link.

MUSL 144. Survey of Orchestral Music. Orchestral literature with emphasis on the evolution of symphonic form and style through the study of selected masterworks of the standard repertoire. Prerequisite: 140 or 141. [3] Staff. (Offered alternate years; offered 2000/01)

MUSL 145. Survey of Choral Music. Choral literature, sacred and secular, from the Renaissance to the present with emphasis on a study of selected masterworks from each period. Prerequisite: 140 or 141. SPRING. [3] Staff. (Offered alternate years)

MUSL 147. American Music. A history of music in the United States from 1620 to the present. Distinctly American musical traditions such as shape-notes, minstrelsy, jazz, twentieth-century synthesis. Recommended: 140, 141, or music reading skills sufficient to follow a score. FALL, SPRING. [3] Cockrell, Simonett.

MUSL 148. Survey of Jazz. A survey of jazz, with particular attention to major composers “Jelly Roll” Morton, Duke Ellington, and Thelonius Monk, and major innovative soloists Louis Armstrong, Charlie Parker, and Ornette Coleman. FALL, SPRING. [3] Barz.

MUSL 149. American Popular Music. Historical study of ways the culture of a nation is reflected and sometimes shaped by the chosen music of groups comprising the American “salad bowl.” Topics include audience reception; production and consumption; multiculturalism; meaning. FALL, SPRING. [3] Lowe.

MUSL 160. World Music. World music as a cultural product; selected musics of Africa, Native America, India, Indonesia, and African America. Topics include music and religion, popular music, fieldwork methodology, and gender issues. FALL. [3] Barz.

MUSL 170. Asian Musical Cultures. Selected classical, folk, devotional, and popular musics of India, Indonesia, Japan, and China. Historical, social, and cultural contexts; extensive listening. Recommended: 160. [3] (Offered alternate years; offered 2001/02).

MUSL 171. African Music. A survey of selected traditional and popular musics of Africa. Historical, social, and cultural contexts; listening; some performances in class. SPRING. [3] Barz.

MUSL 183. Music, the Arts, and Ideas. The changing historical relationships among music, literature, fine arts, and philosophy, and musical developments as responses to social, political, and economic circumstances. FALL, SPRING. [3] Link.

MUSL 200. Women and Music. An investigation of the roles women have played in the development of Western music—performance, composition, patronage, education—and the social and economic factors which have influenced their position. Recommended: 140 or 141 or familiarity with the style periods of classical Western music. SPRING. [3] Cyrus, Lowe. (Offered alternate years).

MUSL 218 Words and Music. (Also listed as English 218) An investigation of works of literature that have inspired musical settings and the musical settings themselves. Emphasis on literary and musical analysis and interpretation. No musical background assumed. [3] Jarman (English), Michael Rose. (Offered alternate years).

MUSL 242–243–244. Survey of composers and works from antiquity to the present, emphasizing performance practice, style characteristics, and evolution of form. Prerequisite: 140 or 141.

242. Music of the Middle Ages and Renaissance. FALL, SPRING. [3] Cyrus, Lowe.

243. Music of the Baroque and Classic Eras. Prerequisite: 242. FALL, SPRING. [3] Lowe, Cockrell.

244. Music of the Romantic and Modern Eras. FALL, SPRING. [3] Cockrell.

MUSL 247. Opera. Opera as drama approached primarily through the libretto and its sources, with attention to musical styles, socioeconomic conditions, and dance. Major works studied through readings, video, and live performance. Prerequisite: 140 or 141. FALL. [3] Shay. (Offered alternate years)

MUSL 249. Historical Performance Practices. Methods, materials, and issues involved in the performance of music prior to 1800. Ornamentation, improvisation, vocal and instrumental tone color and technique, access to repertory and performing editions. Practical application of concepts. Prerequisite: 140 or 141. [3] (Not currently offered)

MUSL 264. Exploring the Film Soundtrack. Relationships among sound track, image, and narrative in film. The complex of music, sound, and dialog in a variety of American films, from silents to Hollywood blockbusters and cartoons. Topics include: diagesis, temporality, continuity, and musical style. Discussion, video, and film research, reading, and listening. No musical background required. FALL, SPRING. [3] Link.

MUSL 289. Independent Study. Development and execution of a program of study in musicology or ethnomusicology under the direction of a member of the department. (See Academic Regulations section.) [Variable credit 1–3 hours each semester.] Staff.

MUSL 294. Selected Topics in Music History. Selected methodological approaches focused on a particular topic each semester, as announced in the *Schedule of Courses*. May be repeated for credit when topics vary. Prerequisite: MUSL 242, 243, or 244. [3]

MUSL 298. Senior Thesis. Completion of an extended paper based upon musicological or ethnomusicological research under the supervision of a faculty sponsor. Progress monitored via tutorials. Open only to seniors. [Requires approval of Committee on Individual Programs.] Prerequisite: 242–244. [Variable credit: 1–3 hours each semester; may be repeated once] Staff.

MUSL 299a–299b. Senior Honors Thesis. Independent research on a musicological or ethnomusicological topic culminating in a written thesis submitted to the faculty. Progress monitored via tutorials. Students completing this course with distinction, including a thesis and oral defense, will earn honors in music literature and history. Open only to students in the department honors program. Prerequisite: departmental approval of formal prospectus. [3–3] Staff.

MUSO 103. Musical Theater in America: A Cultural History. From eighteenth-century melodrama and vaudeville through the musicals of the 1940s and 1950s to the contemporary emphasis on integration of spectacle, dance, and other theatrical arts. Readings, live productions, guest lecturers, and film. SPRING. [3] Needham.

MUSO 181. From Empire to Europe: The Composers of the Twentieth-Century England. An examination of British composers from the end of the Victorian era to the present, including Elgar, Bax, Walter, Vaughan Williams, Tippett, Britten, Birtwistle, and the Beatles. Historical and social contexts of their music along with shifting trends in music. Offered in Humanities in London. [3] Rushton.

MUSO 289. Independent Study. Development of a project or program of reading under the direction of a faculty sponsor. Consent of the faculty sponsor is required. Approval of the Committee on Individual Programs is required. (See Academic Regulations section) [Variable credit: 1–3 hours each semester] Staff.

MUSO 297. Senior Seminar. Comprehensive review and correlation of the materials of music history, literature, and theory. Prerequisite: MUSC 221 (Theory IV) and MUSL 244 (Music of the Romantic and Modern Eras). [1] Staff. (Not currently offered)

Neuroscience

DIRECTOR Terry L. Page

DIRECTOR OF HONORS AND INDEPENDENT STUDIES Hans-Willi Honegger

PROFESSORS A.B. Bonds (Engineering), William F. Caul, Jeanette Norden (Medicine),

Terry L. Page, Elaine Sanders-Bush (Medicine)

SENIOR LECTURER Leslie M. Smith

I THE study of the nervous system is an interdisciplinary enterprise that draws upon a variety of scientific disciplines ranging from molecular biology and biophysics to computational science and engineering to the study of behavior and cognition. To meet the challenge of providing training for entry into this exciting and growing field, Vanderbilt offers an interdisciplinary program of concentration in Neuroscience that draws upon expertise from several departments within the University. The program consists of three components. The first provides for a broad foundation in the basic sciences of biology, chemistry, mathematics, and physics. Second, the program provides an introduction to the fundamentals of neuroscience that include both lecture courses and laboratory experiences. Finally, the program allows students to pursue more advanced work in one or more specific sub-areas of neuroscience through elective courses. Students are also encouraged to participate in research in the laboratories of neuroscience faculty under the auspices of an Independent Research course, Neuroscience 292. More extensive research experience is available through the Honors Program in Neuroscience.

The program is directed by Terry L. Page, Professor of Biology.

Program of Concentration

Students majoring in Neuroscience are required to complete a core of introductory courses in mathematics, chemistry, physics, and biology that provide a broad scientific background necessary to the study of neuroscience. The neuroscience major consists of 39 hours of course work that includes 8 hours of organic chemistry and 31 hours of neuroscience and related courses distributed among three groupings: Principles of Neuroscience (9 hours), Neuroscience Laboratory Courses (4 hours), and electives (18 hours) that are distributed between neuroscience courses and courses that are related to specific disciplines in neuroscience. A maximum of 2 hours of research credit may be used to satisfy elective course requirements (6 hours for Honors candidates). Excluding research credit (292 or 296), neuroscience and related-course electives must be drawn from at least two departments.

Students seeking a second major within the College of Arts and Science may count a maximum of 6 hours of 200-level course work to meet the requirements of both majors.

Required Math & Science Courses:

*Biological Sciences 110a–110b, 111a–111b; *Chemistry 102a–102b, Chemistry 219a–219b, Chemistry 220a–220b; *Mathematics 150a–150b or 155a–155b or 165; Physics 116a–116b or 117a–117b or 121a–121b. (Starred courses are prerequisites for certain required courses in the program).

*Neuroscience and Related Courses:**Principles of Neuroscience (9 hours required)*

Biology 252 (also listed as Biological Sciences 252); Neuroscience 201 (also listed as Psychology 201), 255

Neuroscience Laboratory Courses (4 hours required)

Biology 253; Neuroscience 292; Psychology 234

Neuroscience Courses: (12 hours required)

Biology 254 (also listed as Biological Sciences 254); Neuroscience 291, 292 (2 hours except for Honors candidates who may count up to 6 hours), 296, 299; Physics 256; Psychology 214, 216, 232, 235, 236 (same as EECE 236), 269a, 269b, 272, 274, 277, 278, 279

Related Courses (6 hours required)

Biology 201 (also listed as Biological Sciences 201 and Molecular Biology 201), 230 (also listed as Biological Sciences 230), 240 (also listed as Biological Sciences 240 and Molecular Biology 240), 258, 270 (also listed as Biological Sciences 270); Biomedical Engineering 102, 251, 252; Chemistry 210, 221, 224, 230; Computer Science 101; Electrical and Computer Engineering 112, 200; Mathematics 175, 198; Molecular Biology 210 (also listed as Biological Sciences 210), 211 (also listed as Biological Sciences 211), 220 (also listed as Biological Sciences 220), 255, 265; Physics 210 (also listed as EECE 200), 226a, 226b, 229a, 229b; Philosophy 244, 256; Psychology 209, 222, 225, 252, 258, 261

Honors Program

Superior students with a strong research orientation are encouraged to consider the Honors Program in Neuroscience. Normally a student will apply to enter the Honors program in the fall semester of the junior year and assemble an Honors Committee that will consist of the major adviser and at least two other appropriate members of the faculty. The student should begin within the program the following semester. Entrance into and satisfactory completion of the Honors program requires that students maintain an overall grade point average of 3.0 and a grade point average of 3.2 in courses counting toward the Neuroscience major. Honors candidates must meet all the normal requirements for the Neuroscience major, but students are expected to complete both Biology 253 and Psychology 234 to satisfy the laboratory requirement and the elective course work must include at least 6 hours of Neuroscience 292, Independent Research in Neuroscience, or 296,

Honors Research. The candidate must present an Honors Thesis during the final semester in residence and satisfactorily pass an oral examination by the student's Honors committee. Students interested in becoming honors candidates should consult with the Director of Honors and Independent Study of the Committee on Neuroscience.

Minor in Neuroscience

This program provides a foundation of knowledge in neuroscience that is appropriate for students majoring in a related discipline or who have a general interest in the nervous system. The minor program consists of 15 hours of course work distributed as follows:

Neuroscience 201

Biology 252

At least 9 hours (3 courses) chosen from NSC 255 and the courses listed as "Neuroscience Courses" in the Program of Concentration in Neuroscience, except that research courses (Neuroscience 292 and 296) do not count toward the minor.

As prerequisites, students are also required to complete two semesters of chemistry with a laboratory and Biological Sciences 110a,b and 111a,b.

201. Neuroscience. (Also listed as Psychology 201) A comprehensive introduction to the field of neuroscience from important molecules to cell function to neural systems to cognition. Topics include the physiology of nerve cells, the sensory systems of vision, audition and touch, the motor system, sleep, consciousness, speech and sexual behavior. Coverage of clinical topics includes the chemical basis of the psychoses, diseases of the brain, and repair mechanisms after brain injury. FALL, SPRING. [3] L. Smith.

255. Integrative Neuroscience. Structure and function of nervous systems. Emphasis on vertebrate brain and the relationship of anatomy, physiology, and biochemistry to sensory perception, cognition, motor activity, and learning and memory. Prerequisite: 201. SPRING. [3] Norden.

291. Independent Reading in Neuroscience. Reading and discussion of research papers on a selected topic under direction of a faculty sponsor. Consent of both faculty sponsor and the Director of Honors and Independent Study is required. May be taken twice. FALL, SPRING. [1] Staff; Honegger, coordinator.

292. Undergraduate Research. Original student research on a defined problem in neuroscience under direction of a faculty sponsor. Consent of both faculty sponsor and the Director of Honors and Independent Study is required. May be taken for credit more than once. FALL, SPRING. [2] Staff; Honegger, coordinator.

296. Honors Research. Participation in a research project under the direction of a faculty sponsor, culminating in an oral presentation and written thesis submitted to the faculty. Open only to neuroscience majors in the honors program. May be taken more than once to a total of 6 hours. FALL, SPRING. [2] Staff; Honegger, coordinator.

299. Senior Seminar in Neuroscience. Seminar with advanced reading, discussion, and writing on a specific topic in neuroscience. Limited to seniors. SPRING. [3] T. Page.

Philosophy

CHAIR Michael P. Hodges

DIRECTOR OF UNDERGRADUATE STUDIES Gregg M. Horowitz

DIRECTOR OF GRADUATE STUDIES Henry A. Teloh

PROFESSORS EMERITI John J. Compton, Clement Dore, Donald W. Sherburne

PROFESSORS Jay M. Bernstein, Lenn E. Goodman, Michael P. Hodges, John Lachs,

Lucius T. Outlaw, Jr., John F. Post, Henry A. Teloh, David Wood, Richard M. Zaner

ASSOCIATE PROFESSORS Idit Dobbs-Weinstein, Robert R. Ehman, Gregg M. Horowitz,
Jeffrey S. Tlumak

ASSISTANT PROFESSORS Mark J. Bliton, Stuart G. Finder, José Medina.

THE Department of Philosophy at Vanderbilt offers a wide range of courses relating philosophy to various dimensions of human concern. The department also emphasizes those philosophers and movements that have had significant, forming effect in Western culture.

Program of Concentration in Philosophy

The program of concentration should be tailored to the needs and interests of the student. The following distribution of courses is required as part of the major. Logic: 102 or 202 (at least 3 hours); Ethics: 105, 238, or 239¹ (at least 3 hours); History of Philosophy: 210, 211, 212 (at least six hours). Any alterations must be approved by the director of undergraduate studies. We encourage all majors to work closely with their advisers to select courses that form a coherent whole. The student must take at least 30 hours in the major field.

Honors Program in Philosophy

The Honors Program offers opportunities for advanced study in philosophy, including independent research projects and/or enrollment in certain graduate seminars (with permission of the instructor). To be admitted to the program, the student must: a) be a major in philosophy; b) have a grade point average of 3.0 in all courses; c) have a 3.3 grade point average in philosophy courses; and d) develop a written proposal for advanced study in consultation with a philosophy faculty sponsor. Students who satisfy these requirements should meet with the Director of Undergraduate Studies to review their programs, whereupon the Director may nominate the students for Honors work. Honors work typically begins in the junior year or in the first semester of the senior year. Students who successfully complete the program while maintaining the grade point averages of 3.0 generally, and 3.3 in the major, will receive Honors in Philosophy; students who do especially distinguished work will receive High Honors.

Minor in Philosophy

The minor in philosophy consists of 18 hours, including at least 12 hours in courses beyond the 100 level. The minor program will be constructed so as to

provide a broad grounding in philosophy and to complement the student's other studies. Each program must be approved by the Director of Undergraduate Studies.

Course 100 or 100W or 105 or 115 or 115W is ordinarily taken prior to all other philosophy courses, except 102 and 202 (logic courses), 244 (philosophy of science), and 240 (aesthetics).

100, 100W. Introduction to Philosophy. An introduction to the basic problems of philosophy based upon readings in the works of selected leading philosophers. FALL, SPRING. [3] Staff.

102. General Logic. A study of the uses of language, definition, informal fallacies, the theory of the syllogism, the basic operations of modern symbolic logic, and selected issues in inductive logic and scientific method. Emphasis is placed on the ambiguities and pitfalls of ordinary usage and on techniques for translating ordinary arguments into formal logic. FALL, SPRING. [3] Staff.

105. Introduction to Ethics. A study of theories of the good life and of the nature of virtue. Readings in major texts and discussion of selected problems. FALL, SPRING. [3] Lachs, Teloh.

115, 115W. Freshman Seminar. [3]

120. The Meaning of Life. Accounts of life's meaning. The relations between ways of living, happiness, and the fact of death. The individual's role in giving meaning to life. Readings from Mill, Tolstoy, Kierkegaard, and several contemporary thinkers. SPRING. [3] (Not currently offered)

202. Formal Logic and Its Applications. A self-contained course designed to convey an understanding of the concepts of modern formal logic, to develop convenient techniques of formal reasoning, and to make some applications of them in one or more of the following: psychology, linguistics, structuralist studies, information and computer sciences, and the foundations of mathematics. Philosophy 102 is not required. FALL. [3] Talavera.

206. Technology and Human Values. Moral problems arising out of the influence of technology on human life including pollution, population control, and individual privacy. FALL. [3] Post.

210. Ancient Philosophy. (Also listed as Classics 210) An examination of the major Greek and Roman philosophers with emphasis on the works of Plato and Aristotle. FALL. [3] Teloh.

211. Medieval Philosophy. Comparative study of key figures in Islamic, Jewish, and Christian philosophy as they struggle with the philosophy of logic, metaphysics, language, culture, politics, ethics, and nature. SPRING. [3] Teloh.

212. Modern Philosophy. An examination of the major philosophers of modern Europe from Descartes and Spinoza through Locke, Berkeley, Hume, and Kant. SPRING. [3] Tlumak.

213. Contemporary Philosophy. An examination of selected problems treated in recent philosophical literature such as meaning, perception, knowledge, truth, and freedom. Readings from the Anglo American analytical and the phenomenological traditions. SPRING. [3] Post.

217. Metaphysics. Selected problems in metaphysics such as ultimate explanation, meaning of existence, time and eternity, freedom and determinism, and science and religion. FALL. [3]

218. Hellenistic and Late Ancient Philosophy. (Also listed as Classics 218) Philosophical ideas of Stoics, Cynics, Epicureans, skeptics, Peripatetics, Neoplatonists, and early monotheist thinkers such as Philo, Origen, and Philoponus. [3] Goodman. (Not currently offered)

220. Immanuel Kant. Kant's revolutionary critique of the foundations of human knowledge, moral obligation, and religious faith, with readings from his three Critiques and lesser works. FALL. [3] (Not currently offered)

222. American Philosophy. (Also listed as American Studies 225) A study of the works of selected American philosophers from the colonial period to the present. SPRING. [3] Outlaw.

224. Existential Philosophy. A study of two or three existential philosophers and selected problems which arise in relation to their thought. SPRING. [3]

226. Phenomenology. Selected readings from such thinkers as Husserl, Sartre, and Merleau-Ponty on the structures of experience, the sources and limits of knowledge, mind, and body, interpersonal relations, and the meaning of freedom. SPRING. [3] Zaner.

228. Nineteenth-Century Philosophy. A study of selected themes and writings from nineteenth-century European philosophers. FALL. [3]

231. Philosophy of History. Focus on alternative conceptions of time and history in Aristotle, Augustine, Kant, Hegel, Heidegger, and Benjamin. FALL. [3] (Not currently offered)

234. Philosophy of Education. Analysis of educational concepts. Educational implications of theories of knowledge and theories of the individual. Emphasis on higher education. SPRING. [3] Hodges.

235. Feminist Philosophy. (Also listed as Women's Studies 235) Recent issues in feminist thought including the gender/sex distinction, sexuality, embodiment and feminist epistemology. SPRING. [3]

237. Ethics and Medicine. Selected ethical issues raised by clinical practice, medical theories, and biomedical research and technology. SPRING. [3] Bliton.

238. Contemporary Ethical Theory. A study of theories about the cognitive foundations of ethical discourses. Prerequisite: 105. SPRING. [3] Ehman.

239. Moral Problems. A discussion of specific moral problems such as the justification of abortion and euthanasia. Moral theories such as utilitarianism will be discussed, but the emphasis will be on their relevance to the solution of moral problems. Prerequisite: 105. SPRING. [3]

240. Aesthetics. The leading accounts of the nature of art, the character of aesthetic experience, the nature of artistic creation, and selected problems associated with art in specific media. FALL. [3] Horowitz.

241. Contemporary Issues of Aesthetics. Problems posed by modern, avant-garde, and contemporary art, including abstraction, non-traditional media such as happenings and installations, and political art. Topics include the aims of new art, the changing role of the spectator/reader/listener, and transformations of the sites of artistic experience. [3] (Not currently offered)

242. Philosophy of Religion. A study of various problems concerning religious experiences; ideas about religion and divinity. FALL. [3]

243. Philosophy of Film. Challenges posed by film forms to traditional aesthetics and the novel philosophical approaches created to deal with them. Topics include the nature of the film image, film and experiential time, cinematic genres, the problem of mass art, and feminist critiques of spectatorship. Weekly screenings. FALL. [3] Horowitz.

244. Philosophy and the Natural Sciences. Philosophical issues in the methodology, conceptual structure, patterns of explanation, historical development, cultural impact, and metaphysical and ethical implications of the natural sciences. Prerequisite: satisfaction of the Basic Science requirement. SPRING. [3]

246. Philosophy of Language. Philosophical problems in the methodology of linguistics, relations between thought and language, theories of meaning and symbolism, the nature of metaphor, the philosophical implications of theories of language acquisition. FALL. [3] Medina.

247. Kierkegaard and Nietzsche. A study of selected works. [3] (Not currently offered)

252. Political and Social Philosophy. A study of selected social and political theories. Critical analysis of the relevant works of Hegel, Marx, Lenin, Mill, Nietzsche, Gentile, and others. FALL. [3] Teloh.

253. Philosophy and Economic Policies. A study of individual freedom, property rights, and welfare in their implications for a free market, private ownership of means of production, taxation, and expenditure for public goods. Readings from selected philosophers and economists—e.g., Locke, Hegel, Rawls, Nozick, Marx, Hayek, Friedman, Galbraith. FALL. [3] Ehman.

254. Modern Philosophies of Law. Contemporary theories of legal validity, legal liability (criminal and civil), and contractual obligation with special attention to the controversy between legal positivism and “natural law” theories and the assessment of contemporary economic analyses of legal rights. SPRING. [3] Ehman.

255. Philosophy and Literary Theory. (Also listed as Comparative Literature 255) A study of the relation between recent continental philosophy and theories of literature and of literary criticism. Selected works will be included. [3] (Not currently offered)

256. Philosophy of Mind. Selected problems in the philosophy of mind, such as the relationship between mind and body, the nature of consciousness, the problem of other minds, the status of self-knowledge, and the possibility of machine and other intelligence. Connections with empirical investigations in related cognitive disciplines. SPRING. [3] Medina.

258. Contemporary Political Philosophy. The emergence of post-liberal political thought. The politics of recognition, the specificity of political action, transformations in political theory as a consequence of gender, race, and environmental issues. These will be studied through the examination of the writings of Hannah Arendt, Cornelius Castoriadis, Heidegger, Derrida, and Habermas. FALL. [3] Bernstein.

260. Twentieth-Century Continental Philosophy. (Also listed as Comparative Literature 260) A study of selected twentieth-century philosophers such as Derrida, Foucault, and Lacan. SPRING. [3] Wood.

289a–289b. Independent Readings. Designed for majors not in the Honors program. Consists of a project to be carried out under the supervision of a member of the department. All projects must be approved by the department. FALL, SPRING. [Variable credit: 1–6 each semester, not to exceed 12 over a four-semester period] Staff.

294a–294b. Selected Topics. Students may enroll in more than one section of this seminar each semester. [3 each seminar, not to exceed 12 over a four-semester period] Staff.

295. Independent Study. Designed for students in the Honors program in philosophy. Consists of guided reading, periodic reports, and work on Honors thesis. FALL, SPRING. [Variable credit: 3–6 each semester, not to exceed 18 over a three-semester period] Staff.

310. Seminar: Theory of Knowledge. [3]

312. Seminar: Plato. [3]

314. Seminar in Medieval Philosophy. [3]

318. Seminar: Contemporary Naturalism. [3]

320. Seminar: Metaphysics. [3]

325. Seminar: Husserl. [3]

326. Seminar: Heidegger. [3]

327. Seminar: Heidegger after *Being and Time*. [3]

328. Seminar: Philosophy of Religion. [3]

329. Readings in Contemporary Continental Philosophy. [3]

330. Seminar in Philosophy. [3]

332. Seminar: History of Philosophy. [3]

335. Philosophy and Medicine: I. [3]

336. Philosophy and Medicine: II. [3]

340. Readings in Philosophy. [Variable credit: 1–3]

341. Philosophical Readings in French. [3]

342. Philosophical Readings in German. [3]

343. Philosophical Readings in Classical Languages (Latin or Greek). [3]

344. Philosophical Readings in Logic. [3]

345. Hermeneutics. [3]

Physics and Astronomy

CHAIR Richard F. Haglund Jr.

DIRECTOR OF UNDERGRADUATE STUDIES Paul D. Sheldon

DIRECTOR OF GRADUATE STUDIES Volker E. Oberacker

DIRECTOR OF THE DYER OBSERVATORY Douglas S. Hall

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P. Galen Lenhert, William T. Pinkston, C. E. Roos

PROFESSORS Royal G. Albridge, John Paul Barach, Charles A. Brau, Frank E. Carroll Jr.,

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Volker E. Oberacker, Sokrates T. Pantelides, Robert S. Panvini, James Patton,

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Medford S. Webster, Thomas Joseph Weiler, John P. Wikswo Jr.

DISTINGUISHED RESEARCH PROFESSOR C. Robert O'Dell

ADJUNCT PROFESSORS C. Richard Chappell, Walter A. Greiner

ADJOINT PROFESSORS W. Ralph Butler, Amand Faessler, Donald D. Henderson,

Robert V. F. Janssens, Gerald Lucovsky, Charles H. McGruder, Stephen Pennycook

ASSOCIATE PROFESSORS Charles Coffey, Steven E. Csorna, Senta V. Greene,

Thomas W. Kephart, David W. Piston, Paul D. Sheldon, David A. Weintraub,

Robert A. Weller

ADJOINT ASSOCIATE PROFESSORS Arnold Burger, Richard Mu

ASSISTANT PROFESSORS Dennis Duggan, Frederick Gittes, Will E. Johns, Ilias E. Perakis,

Lou Reinisch, Didier Saumon

1 AS fundamental sciences, physics and astronomy continue to be driving intellectual forces in expanding our understanding of the universe, in discovering the scientific basis for new technologies, and in applying these technologies to research. In keeping with this crucial role, the Department of Physics and Astronomy offers courses dealing with both the cultural and intellectual aspects of the disciplines; a broadly-based major program flexible enough to serve as preparation for graduate study in physics, applied physics, medical physics, astronomy or astrophysics, professional study in another area, or technical employment; and minor programs for students desiring to combine physics or astronomy with other majors. An honors program is available for qualified departmental majors.

A distinguishing feature of the Vanderbilt undergraduate curriculum is the close coupling between teaching and research. At Vanderbilt, active research groups are studying the physics of elementary particles; nuclear structure and heavy-ion reactions; nonlinear interactions of lasers with materials at ultra-fast time scales; the behavior of electrons, atoms, molecules, and photons near surfaces; the electric and magnetic properties of living systems; the structure and dynamics of biopolymers; unusual stars, young stars; equations of state in brown and white dwarfs; and cosmology. Most professors are engaged in research, and undergraduate students can participate in this research informally or through independent study or summer work.

The Society of Physics Students arranges informal discussions and field trips to scientific laboratories at other institutions.

Majors in the Department of Physics and Astronomy

The departmental major provides a thorough grounding in the core areas of physics. It is suitable either as a preparation for careers in science and engineering, or as a springboard for applying technical knowledge in such fields as business, medicine, law, public policy and education. The major in the Department of Physics and Astronomy consists of (1) a two-semester, calculus-based introductory physics course (Physics 116a–116b, 117a–117b or 121a–121b); (2) a nineteen-hour core sequence, which consists of five courses covering the major subdisciplines of physics at an intermediate level and one semester each of the astronomy and physics seminars (Astronomy 250, Physics 250); and (3) six hours of electives in physics or astronomy. The core intermediate-level courses are: quantum physics and applications (Physics 225a–225b); thermal and statistical physics (Physics 223); intermediate mechanics (Physics 227a); and electricity and magnetism (Physics 229a).

Students with specific educational or professional objectives in the sciences or engineering may wish to augment the major by taking additional courses to prepare for graduate study or employment in physics, astronomy and astrophysics, applied physics, or medical physics.

Licensure for Teaching. Candidates for teacher licensure in physics at the secondary level may qualify by taking the basic physics major together with the requisite education courses described in the chapter on Licensure for Teaching in the Peabody College section of the catalog.

Honors Program

Students majoring in the Department of Physics and Astronomy may apply for admission to an honors program that allows them to carry on independent study under the guidance of faculty members, usually in areas related to ongoing research programs in the department. Admission to the honors program is granted only to students who have attained a grade point average of at least 3.000. The requirements for graduation with honors in physics or in astronomy are at least a *B* average in all courses in the major, a senior thesis of high merit, and high attainment on an oral honors examination given near the close of the senior year. Information on honors programs is available from the department's honors committee.

At least 10 hours must be in 291a–291b, and 296a–296b. One course in physics or astronomy numbered above 250 can count as part of the additional ten hours of courses required for Honors.

Minor in Physics

Introductory physics sequence	8–10
Physics 153 or 225a	3–4
Two of Physics 221, 223, 227a, 229a	6
Physics 250a or 250b	<u>1</u>
Total hours	18–21

This program provides a background in physics suitable for students majoring in related disciplines or with a general interest in the field. Students who have completed equivalent work in other departments may substitute Astronomy 175 or one approved 200-level physics or astronomy course toward the hours required for the minor; however, only one such substitution is allowed to count toward the number of hours required for the minor.

Minor in Astronomy

1. Astronomy 101 and either Astronomy 102 or 175	8
2. One course from Astronomy 105, 115, 130, Geology 102, 104, or Physics 108	3–4
3. Two courses from Astronomy 222, 223, 252, 253, Physics 221, or Science, Technology, and Humanities 203, with at least one from 200-level Astronomy courses	6
4. Astronomy 250a and 250b	<u>2</u>
Total hours	19–20

Physics

Courses on Science and Society

Physics 101, 108, 115, and 115W examine the relationship of science to society, technology, and culture, and assume no prior background in physics.

101. Practical Physics. A nonmathematical analysis of the methods, laws, and fundamental forces of physics as they apply to simple Lego mechanisms, the automobile, and the computer. The historical development of technology and its impact on society. Two lectures, and one three-hour laboratory per week. [4]

108. Atmospheric Physics. The physics of weather, climate, and atmospheric phenomena. Geography and climate. Influence of climate on human society and on the historical development of science. Global warming, ozone depletion, and nuclear winter. Credit not given for both 108 and 115 Section 1 (Atmosphere and Climate). FALL. [3] Barach.

115, 115W. Freshman Seminar. [3]

Introductory Courses

Introductory physics is offered at three levels, each with the appropriate laboratory. Only one can be taken for credit. Successful completion of the first semester of a sequence is prerequisite for the second semester.

1. *Physics 110a–110b, 111a–111b.* Intended for students without strong backgrounds in mathematics or science who have a general interest in the subject. Treats physics from a conceptual point of view, with some historical and philosophical features. Not recommended as preparation for further study in a natural science.

2. *Physics 116a–116b and 117a–117b.* These two sequences of calculus-based courses are equivalent. In 116a–116b engineering examples will be used to illustrate the principles. The 117a–117b sequence is designed primarily for premedical and pre dental students. These two sequences can be interchanged if scheduling conflicts occur.

3. *Physics 121a–121b.* Designed for physics and astronomy majors and for science, engineering, and mathematics majors who intend to pursue research-oriented careers. Prospective majors should begin the sequence in the fall semester of their freshman year. It differs from 117a–117b in the selection of topics and emphasis, but is taught at about the same level; it assumes concurrent study of calculus.

110a–110b. Introductory Physics. Primarily intended for those who do not expect to major in science. Motion, forces, conservation laws, light, electricity, quantum theory, radioactivity, the atomic nucleus, and atomic energy, accompanied by a consideration of the growth, structure, and methods of physics. Ordinarily accompanied by 111a–111b. [3–3] Albridge, Hamilton, Pantelides, Panvini, Oberacker.

111a–111b. Introductory Physics Laboratory. Laboratory to accompany 110a–110b. Corequisite: 110a–110b. One three-hour laboratory per week. [1–1] Ramayya, Panvini.

116a–116b. General Physics. Designed primarily for engineering students with engineering examples. The topics include mechanics, heat, sound, electricity and magnetism, optics, and modern physics. Accompanied by a one three-hour laboratory per week. Prerequisite: Introductory calculus. [4–4] Csorna, Greene, Johns, Maguire, Perakis, Ramayya, Tolk, Weiler.

117a–117b. General Physics. Introduction to general physics and its applications. Mechanics, heat, sound, electricity and magnetism, optics, and modern physics. Accompanied by one three-hour laboratory per week. Prerequisite: Introductory Calculus. [4–4] Albridge, Barach, Gittes, Umar.

121a–121b. Principles of Physics. Designed for first-year students who plan to major in the department or in related disciplines. Dynamics, thermodynamics, electromagnetism, wave motion, optics, atomic and nuclear physics. Corequisite: Mathematics 171a–171b or higher numbered calculus course. Three lectures and a one-hour discussion period on modern topics of interest. One three-hour laboratory per week. [5–5] Ramayya, Sheldon, Johns.

153. Contemporary Physics. Application of quantum physics and special relativity to case studies in current research in atomic, molecular, condensed-matter and subatomic physics; symmetries and conservation laws. Prerequisite: one year each of introductory physics and calculus. [3]

Survey Courses

The following courses convey the basic concepts and experimental techniques of specialized areas of current interest in physics. They are thus suitable as introductions to particular subfields of physics or as background for directed-study projects. Prerequisite: one-year introductory physics sequence, Physics 153 or 225a, and one year of calculus. No credit for graduate students in the department.

210. Introduction to Electronics. (Also listed as EECE 200, Elements of Electrical Engineering, School of Engineering) An introduction to passive and active circuits. Direct-current and alternating-current circuits, power supplies, amplifiers, oscillators, wave-shaping and switching circuits. The emphasis will be on the operational characteristics of these circuits. Prerequisite: Math 175. SPRING. [3] Staff of the Department of Electrical Engineering.

224. Physical Analysis of Biological Systems. Applications of physics to human biology, including biomechanics, exponential growth and decay, statistical mechanics and mass transport, bioelectricity and biomagnetism. Prerequisite: one year of calculus. Course in biology recommended. SPRING. [3] Wikswo.

228. Physics of Medical Imaging. Applications of physics to medicine, including signal analysis, image processing, atoms and light, x-rays, nuclear medicine, and magnetic resonance imaging. Prerequisite: one year of calculus. FALL. [3] Price.

Undergraduate Core Curriculum Courses

The intermediate-level courses cover the major subdisciplines of classical and modern physics. They have as prerequisites any of the one-year introductory calculus-based physics sequences and one year of calculus.

221. Classical and Modern Optics. Geometrical optics: reflection, refraction, ray tracing, aberrations, interference. Physical optics: wave theory, absorption, dispersion, diffraction, polarization. Properties of light from lasers and synchrotron sources; photodetectors; optical technology. [3]

223. Thermal and Statistical Physics. Temperature, work, heat, and the first law of thermodynamics. Entropy and the second law of thermodynamics. Kinetic theory of gases with applications to ideal gases and electromagnetic radiation. FALL. [3] Webster.

224. Physical Analysis of Biological Systems. Applications of physics to human biology, including biomechanics, exponential growth and decay, statistical mechanics and mass transport, bioelectricity and biomagnetism. Prerequisite: one year of calculus. Course in biology recommended. SPRING. [3] Wikswo.

225a–225b. Introduction to Quantum Physics and Applications. A survey of modern physics and applications based on elementary quantum mechanics. 225a: Atomic and molecular structure, interaction of light with atoms and molecules, spectroscopy. 225b: Condensed-matter physics, biophysics, special theory of relativity, nuclear and particle physics. One three-hour laboratory per week. Recommended: Mathematics 198. [4–4] Feldman, Csorna.

227a–227b. Intermediate Classical Mechanics. Vector algebra and coordinate transformations; orbital and rotational angular momentum; gravitational and Coulomb central-force problems; free, forced, damped and nonlinear harmonic oscillations; chaos in simple

mechanical systems, normal modes; rigid-body motion; special relativity. Prerequisite: Mathematics 170a–b or equivalent. [3–3] Maguire, Sheldon.

228. Physics of Medical Imaging. Applications of physics to medicine, including signal analysis, image processing, atoms and light, x-rays, nuclear medicine, and magnetic resonance imaging. Prerequisite: one year of calculus. FALL. [3] Price.

229a–229b. Electricity, Magnetism, and Electrodynamics. 229a: Electrostatic fields and potentials; Gauss's law; electrical properties of insulators, semiconductors and metals; the Lorenz force; magnetic fields and forces; electro-magnetic induction, Maxwell's equations and electromagnetic waves. 229b: Electromagnetic waves in dielectrics and conductors; electromagnetic radiation in waveguide structures; relativistic electrodynamics; magnetism as a relativistic phenomenon. Prerequisite for 229a: three semesters of calculus; corequisite for 229b: differential equations. SPRING, FALL. [3–3] Webster, Wikswa.

239a–239b. Advanced Physics Laboratory. Laboratory work in more advanced techniques or design and construction of new physics teaching or research experiments. Prerequisite: 225a–225b. [Variable credit: 1–3 each semester, variable total credit 3–6] Staff.

Advanced Undergraduate Courses

These courses are intended for physics or physics-astronomy majors in their senior year and provide material supporting independent study or honors projects in physics. General prerequisite or corequisite: 225a–225b, 227a, 229a–229b, and Mathematics 175. Graduate students and undergraduates not in the honors program may enroll with consent of the instructor.

240a–240b. Selected Topics. [3–3]

243. Health Physics. Theory and instrumentation in health physics and radiological physics. Radiation shielding design, methods of external and internal dosimetry, and radiation regulatory issues. Prerequisite: 153 or 225a and one year of calculus. [3] Staff.

245. Computational Physics. Programming techniques in physics suitable for personal computers: classical scattering, one-dimensional barrier tunneling, Laplace's equation, static and time-dependent Schrödinger's equation, hydrodynamics, and diffusion. Recommended: Computer Science 120. FALL. [3] Umar.

248. Radiation Biophysics. Response of mammalian cells and systems to ionizing radiation. Acute radiation syndromes, carcinogenesis, genetic effects, and radiobiological basis of radiotherapy. Prerequisite: 224 and Biological Sciences 110a, 111a. [2] Freeman (Radiology and Radiological Sciences).

250a–250b. Undergraduate Colloquium. Seminar presentations and discussion with attention to research topics of current interest. [1–1] Haglund, Staff.

251a–251b. Introductory Quantum Mechanics. 251a: Wave-particle duality, indeterminacy, superposition, the Schrödinger equation, angular momentum, the hydrogen atom, and time-independent perturbation theory. 251b: Spin and indistinguishability, time-dependent perturbation theory, matrix theory, scattering, applications to atomic physics, condensed matter physics, and astrophysics. Prerequisite: 225a and 227a. Recommended: differential equations. FALL, SPRING. [3] Greene, Tolk.

254. Physics of Condensed Matter. Crystal structure and diffraction; phonons and lattice vibrations; free-electron theory of metals; elementary band theory of solids; semiconduc-

tors; optical properties of insulators; and applications to solid-state devices, magnetism, and superconductivity. Prerequisite: 223, 225a, and 227. SPRING. [3] Feldman.

255. Introduction to Particle Physics. Weak, strong, and electromagnetic forces as evidenced by the interactions of elementary particles. Classification of particles and experimental techniques. Prerequisite: 251. SPRING. [3] (Not currently offered)

256. Biophysical Electrodynamics. The physics of bioelectric phenomena: the mechanisms that lead to the transmembrane resting and action potentials in nerve and muscle cells, the differential equations describing propagation of the nerve action potential, and the relationship between the transmembrane and extracellular potentials in nerve and cardiac muscle. SPRING. [3] (Not currently offered)

262. Medical Imaging, Lasers and Energy-Tissue Interactions. Survey of medical technologies, including x-ray, ultrasound, C-T scan, MRI, radiation therapy, and laser medicine and surgery. Each technology will be presented in terms of the fundamental physics and scientific discovery, research and development, and the application to medical care. The historical, sociological, economic, and ethical impacts of the medical technology will be addressed. Prerequisite: one-year of calculus-based physics and Biological Sciences 110a–110b, 111a–111b. [3]

289a–289b. Directed Study. Individual research or readings under close faculty supervision. Duplication of regular course work is to be avoided. No more than a total of 6 hours in 289 and 291 may count toward fulfilling the requirements for a Physics major. FALL, SPRING, SUMMER. [Variable credit: 1–5 each semester.]

291a–291b. Independent Study. Introduction to independent research and scholarly investigation initiated by the student and supervised by faculty. No more than a total of 6 hours in 289 and 291 may be offered for credit toward the major. FALL, SPRING, SUMMER. [Variable credit: 1–6, not to exceed a total of 10.]

296a–296b. Senior Thesis. Independent experimental and/or theoretical investigations of basic problems under faculty supervision, culminating in a written thesis submitted to the faculty. Required for Honors in Physics. Open to selected majors judged by the Department to be capable of independent investigations. FALL, SPRING, SUMMER. [Variable credit: 1–6, not to exceed a total of 10.]

Graduate Courses

300a. Seminar. [1]

301a. Medical Physics Seminar. Radiotherapy treatment techniques and current methodologies in clinical therapy physics. Prerequisite: 224. [1] Staff.

301b Medical Physics Seminar. Topics in medical imaging, techniques and applications. Prerequisite: 226a. [1] Staff.

303. Experimental Nuclear Physics. [3]

304. Radiation Interactions and Dosimetry. [3]

305. Particle and Continuum Mechanics. [3]

306. Biomolecular Physics. [3]

311. Clinical Therapy Physics I. [3]

312. Clinical Therapy Physics II. [2]

313. Clinical Diagnostic Physics. [3]

- 314. Laboratory in Clinical Therapy Physics.** [2]
315. Laboratory in Clinical Diagnostics Physics. [2]
320. Special Topics in Experimental Physics. [3]
329a–329b. Advanced Electrodynamics. [3–3]
330a–330b. Quantum Mechanics. [3–3]
341. Statistical Mechanics. [3]
350. Selected Topics in Theoretical Physics. [3]
357b. Atomic and Molecular Physics. [3]
358a–358b. Interaction of Light with Matter. [3–3]
359a–359b. Surface Structure and Dynamics. [3–3]
360b. General Relativity and Cosmology. [3]
365. Many-Particle Quantum Theory. [3]
370a–370b. Quantum Field Theory. [3–3]
391a. Medical Physics Practicum: Therapy. [6]
391b. Medical Physics Practicum: Diagnostic. [6]

Astronomy

Introductory Courses

- 101. Introductory Astronomy: Solar System.** The sky, ancient astronomy, gravity, light and telescopes, planets and their satellites, space debris, origin and evolution of the solar system. One three-hour laboratory per week. Recommended: Mathematics 133 or equivalent. SPRING. [4] Weintraub.
- 102. Introductory Astronomy: Stars and Galaxies.** The sun; physical properties of stars; the birth, life, and death of stars; pulsars and black holes; our Milky Way galaxy; galaxies and quasars; the “Big Bang.” One three-hour laboratory per week. Recommended: Mathematics 133 or equivalent. FALL. [4] Saumon.
- 115. Freshman Seminar.** FALL. [3] Hall.
- 130. Astronomy through the Ages.** Contributions by early civilizations to astronomy, Greek astronomy, the Copernican revolution, the birth of astrophysics, space age astronomy. SPRING. [3] Hall.
- 175. Principles of Astrophysics.** Telescopes and detectors, physical properties of stars, stellar energy and evolution, pulsars and black holes, our galaxy and other galaxies, and the structure of the universe. For students with active interests in physical science or engineering. No credit for students who have completed 102. Recommended: One semester of college physics and Mathematics 133 or equivalent. [4] (Not currently offered)

Intermediate Courses

222. Observational Astronomy. Principles and techniques including astrometry, photographic and photoelectric photometry, spectral classification, and radial velocity measurements. Scheduled evening sessions at the Dyer Observatory. Prerequisite: 102 or 175; Physics 225a. [3] (Not currently offered)

223. Binary Stars. Visual, eclipsing, and spectroscopic binaries; techniques for solving their orbits. Extended atmospheres, circumstellar matter, mass transfer, x-ray and radio emission, and orbital period changes in binaries. Evolution of close binaries. Prerequisite: 102 or 175. [3] Hall. (Not currently offered)

250a–250b. Undergraduate Seminar. Directed readings and discussions of current topics in astronomy. Normally limited to juniors and seniors with preference to physics-astronomy majors. [1–1] Hall and Saumon.

252. Stellar Astrophysics. Absorption and emission of radiation by the sun and stars. Principles of stellar structure and stellar evolution from formation to death. Prerequisite: Physics 223 and 225a; Mathematics 198. SPRING. [3] Saumon.

253. Galactic Astrophysics. Interstellar matter and gaseous nebulae, the structure and evolution of normal galaxies, active galactic nuclei and quasars, and observational cosmology. Prerequisite: Physics 223 and 225a; Mathematics 198. SPRING. [3] (Offered 2001/02)

289a–289b. Directed Study. Individual or collective student research, or readings, in astronomy undertaken with close faculty supervision. No more than a total of 6 hours in 289 and 291 count toward the major. FALL, SPRING, SUMMER. [Variable credit: 1–3 each semester] Staff.

291a–291b. Independent Study. Independent research projects, or readings, in astronomy initiated by the student and supervised by the faculty. FALL, SPRING, SUMMER. No more than a total of 6 hours in 289 and 291 count toward the major. [Variable credit: 1–3 each semester] Staff.

296a–296b. Honors Research and Senior Thesis. A student will undertake an observational and/or theoretical investigation under the direction of the astronomy staff leading to an appropriately written senior honors thesis. [Variable credit: 1–4 each semester, not to exceed a total of 8] Staff.

Graduate Courses

300a–300b. Astronomy Seminar. [1–1] Staff.

307a–307c–307d. Topics in Astrophysics. [3–3–3]

Political Science

CHAIR M. Donald Hancock

DIRECTOR OF UNDERGRADUATE STUDIES James Lee Ray

DIRECTOR OF GRADUATE STUDIES John A. Vasquez

PROFESSORS EMERITI Robert H. Birkby, Alex N. Dragnich, Erwin C. Hargrove,

William C. Havard Jr., Avery Leiserson, Harry Howe Ransom, Benjamin Walter

PROFESSORS Donna L. Bahry, William James Booth, John G. Geer, George J. Graham Jr.,

Hugh Davis Graham, M. Donald Hancock, Bruce I. Oppenheimer, James Lee Ray,

Carol M. Swain, John A. Vasquez

ASSOCIATE PROFESSORS Wendy A. Hunter, Richard A. Pride, Derek J. Waller,

Kurt Weyland

ASSISTANT PROFESSORS Katherine Barbieri, Geoffrey C. Layman, Bradley Palmquist

SENIOR LECTURER AND RESEARCH ASSISTANT PROFESSOR Marie T. Henehan

INSTRUCTOR Richard Tucker

I THE Political Science Department is oriented toward both teaching and research and has multiple missions. First, it offers a balanced curriculum for undergraduates and graduate students to study the art and science of politics. Second, it offers training for students preparing to become professionals in political science and other fields. Third, it exists as a research faculty seeking new knowledge about government and politics.

Many members of the faculty have national reputations in their fields of scholarship. These research and teaching interests vary widely, from political leadership to the comparison of new and old democratic governments, issues of political economy and public policy, and ethical questions about politics.

Political science majors may participate in independent study, selected topics seminars, freshman seminars, the honors program, and internships. Average class size is close to thirty—small classes make personal contact with the faculty relatively easy. Students participate in the governance of the department through the Undergraduate Political Science Association.

Program of Concentration in Political Science

Students majoring in political science are required to complete a minimum of 30 hours of work, distributed as follows:

Political Science 100, 101, 102, 103, or 150	3
Political Theory (202, 203, 204, 205, 206, 207, 209, 253)	3
Comparative Politics (210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 231, 232, 233, 234)	3
International Politics (220, 221, 222, 223, 224, 225, 226, 227, 228)	3
American Government and Politics (240, 241, 242, 243, 244, 245, 247, 248, 251, 253, 255, 261, 262)	3
Electives (Any 200-level course listed above; 270, 284, 287, 288; up to 6 hours of 100-level courses, including 115W;	

up to 6 hours of 280a, 280b, 289a, 289b, 290a, 290b combined) 15
 Minimum hours: 30

The faculty strongly urges students majoring in political science to include calculus, statistics, economics, history, philosophy, and sociology in their curriculum. Advisers will help students make the appropriate selections.

In meeting the above requirements, students desiring African American emphasis in a program of concentration should consider courses in the following group: 219, 240, 251, 255, and 261. They may also choose to elect the following courses at Fisk University: Political Science 406 (African Political Systems), 245 (Afro-American Political Thought), and 254 (Politics in the Black Community).

Graduate Courses. Qualified undergraduates may enroll in graduate courses with the consent of their adviser, the course instructor, and the Dean for Graduate Studies and Research.

Honors Program

Information concerning admission to and requirements of the departmental honors program is available from the departmental director of undergraduate studies. The program requires: (a) a 3.20 cumulative grade point average; (b) 12 hours of independent research, with the student normally taking 290a–290b during the junior year, and 299a–299b during the senior year; (c) an honors thesis to be completed by the spring of the senior year; and (d) successful completion of an honors oral examination during the second semester of the senior year.

Minors in Political Science

The Department of Political Science offers three minors, which are detailed below. Each consists of 18 hours (one introductory-level course and five upper-level courses). One of these options may be chosen:

Political Theory

103 3
 Any five of the following: 15
 202, 203, 204, 205, 206, 207, 209, 247, 248, 253

World Politics

A student may stress comparative politics or international politics or may mix the two in this minor.

101 or 102 3
 Any five of the following:
 Comparative Politics: 210, 211, 212, 213, 214, 215, 216, 217, 218,
 219, 231, 232, 233, 234, Fisk Political Science 406
 International Politics: 220, 221, 222, 223, 224, 225,
 226, 227, 228 15

American Politics

100 or 150	3
Any five of the following: 204, 222, 223, 240, 241, 242, 243, 244, 245, 247, 248, 251, 253, 255, 261, 262	15

Licensure for Teaching

Candidates for teacher licensure in political science at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

One of the starred courses 100, 101, 102, 103 or 150 is prerequisite for all other political science courses.

★**100. Introduction to American Government and Politics.** A descriptive survey of the constitutional and structural principles, processes, and functions of the American governmental system. FALL, SPRING. [3] Staff.

★**101. Introduction to Comparative Politics.** Democracy, communism, and authoritarian rule in developed and developing countries; political institutions and public policy in diverse national settings; principles of comparative analysis. FALL, SPRING. [3] Staff.

★**102. Introduction to International Politics.** Significant patterns and trends in twentieth-century world politics: modes of conducting relations among nations, instruments for promoting national and supranational interests, and controls over international disputes. Emphasis upon episodes throwing light on the causes of war and the conditions of peace. FALL, SPRING. [3] Staff.

★**103. Introduction to Political Theory.** Moral concepts central to political life: equality, freedom, community, individualism. The ideologies that express them: democracy, liberalism, socialism. Focus on contemporary issues drawing on classical sources. FALL, SPRING. [3] Booth, Graham.

115, 115W. Freshman Seminar. [3]

★**150. U.S. Elections.** Examination of the presidential and congressional elections. The recruitment of candidates, nomination processes, financing campaigns, media coverage, polling, predictive models, and implications of results. FALL. [3] Geer, Oppenheimer.

202. Classical Political Philosophy. Intensive analysis of the principal political philosophers in the classical tradition. FALL. [3] Booth.

203. Modern Political Philosophy. Intensive analysis of the principal political philosophers in the modern tradition. SPRING. [3] Booth.

204. American Political Thought. An analytical study of American political theories and their impact upon our political institutions. SPRING. [3] (Offered 2001/02)

205. Modern Political Ideologies. Analysis of the belief systems of selected political movements, groups, and societies; their relationship to political philosophy; and theories of political action. SPRING. [3] Staff.

206. Foundations of Marxism. Intensive analysis of the political, philosophical, and economic theories of Karl Marx in the context of European philosophical and political traditions. Major critical interpretations of Marx will be stressed. FALL. [3] Graham.

- 207. Liberalism and Its Critics.** Philosophical and political analysis of the utilitarianism of Mill and Bentham and the liberalism of Locke and Kant. Critiques by contemporary Libertarians and Communitarians. [3] (Not currently offered)
- 209. Issues in Political Theory.** Topics vary from semester to semester. May be repeated once if there is no overlap with previous offerings. Prerequisite: 202, 203, 205, or 206. FALL. [3] (Not currently offered)
- 210. West European Politics.** Analysis of political development, social forces, institutions, and public policy in Great Britain, France, West Germany, Italy, and Sweden. FALL. [3] Hancock.
- 211. The European Union.** Political and economic integration. Origins, institutions, decision processes, policies, achievements, and prospects of the European integration movement. SPRING. [3] Hancock.
- 212. Politics in Russia and Successor States.** Government, politics, and system performance in the Soviet Union and contemporary Russia, with some reference to other East European countries. SPRING. [3] Bahry.
- 213. Democratization and Political Development.** Comparative study of political development, with a focus on institutions. The effect of political choices about voting systems, executive and legislative powers, cabinet formation, and other institutions on political competition, parties and government stability. Cases from established democracies and countries undergoing democratization. No credit for students who have taken 317. FALL. [3] Bahry.
- 214. The Japanese Political System.** Study of the government and politics of Japan, in the context of the interaction of traditional and modern elements in contemporary Japanese political style. FALL. [3] Waller.
- 215. Change in Developing Countries.** Comparative study of political and economic change in developing countries. Political implications of ethnicity, economic dependency, and environmental degradation. SPRING. [3] Hunter.
- 216. The Chinese Political System.** Governmental institutions and political processes in the People's Republic of China with emphasis upon the interaction of traditional and revolutionary elements. Some attention to Taiwan since 1950 and to the overseas Chinese as parts of the Chinese political universe. [3] (Offered 2001/02)
- 217. Latin American Politics.** Cross-national analysis of political institutions, cultures, and processes of change in Latin America. FALL. [3] Hunter. (Offered 2001/02)
- 218. Social Reform and Revolution.** Reform and revolution as responses to social inequality. Causes and outcomes of reform and revolution in Europe and Latin America from the mid-nineteenth century to the present. SPRING. [3] Weyland. (Not currently offered)
- 219. African Politics.** Domestic politics and foreign relations of African states in comparative perspective. How African history has been studied and the tools political scientists have developed to study Africa. Colonialism, the colonial legacy, independence movements on the continent, contemporary issues and problems in selected countries (e.g., Ivory Coast, Kenya, Tanzania). SPRING. [3] (Not currently offered)
- 220. Crisis Diplomacy.** Foreign policy decision making and strategy. Emphasis on differences between crises that lead to war and those that do not. Foreign relations of Britain, France, Germany, Russia, and Japan. FALL. [3] Vasquez.

221. Causes of War. Scientific study of the onset of expansion and consequences of war; conditions of peace, emphasizing alliances, arms races, and crisis escalation. SPRING. [3] Tucker.

222. American Foreign Policy. Critical analysis of major international and domestic factors shaping U.S. foreign relations as reflected in selected twentieth-century experiences. FALL. [3] Ray.

223. The Making of U.S. Foreign Policy. Institutions and domestic politics: Congress, the President, the military, the bureaucracy, the media, political parties, interest groups, and public opinion. Decision-making theory, general theories of foreign policy, conceptual tools for analyzing foreign policy. SPRING. [3] (Not currently offered)

224. Theories of World Politics. Analysis of major theories of the basic factors underlying global relations. FALL. [3] Ray. (Not currently offered)

225. International Political Economy. Survey of major issues involving the interaction of political and economic forces at the global level. Particular attention to theories of interdependence and imperialism, the position of developing countries in the international system, multinational corporations, and the economic origins of war. SPRING. [3] Barbieri. (Offered 2000/01)

226. International Law and Organization. The role of international law and international organizations in the contemporary global political system. Focus on the evolution and impact of international law, the United Nations, the International Monetary Fund (IMF), and selected regional organizations. FALL. [3] Ray. (Offered 2001/02)

227. Economics and Foreign Policy. Economic factors influencing foreign policy behavior, including economic actors, conditions, and motivations for conflictual and cooperative relations. Economic instruments used by governments to achieve policy goals: trade ties, economic sanctions, foreign aid. Economic theories of war and peace. FALL. [3] Barbieri. (Offered 2001/02)

228. International Politics of Latin America. Examination of Latin America's role in the international and inter-American system. Special attention to the international response to revolutionary change in the area, and to the region's major actors and their changing relationship with the United States, with other major powers, and with other actors such as multinational corporations and international financial institutions. SPRING. [3] Weyland.

231. Contemporary Issues in Europe. (Also listed as European Studies 231) Detailed analysis of the political, economic, and social issues facing Europe's post-Cold War period including regional integration, transitions to democracy, economic transformation, ethnic-national relations, industrial organization, environmental politics. [3] (Not currently offered)

232. Evolution in French Foreign Policy Under the Fifth Republic. Development of distinct French foreign policy; use of colonial experience in the North-South dialogue; France's place in the new international order. Offered only in Vanderbilt-in-France. SPRING. [3] Pelopidas.

233. Social Movements in the Developed and Developing Worlds. Comparative study of protest movements with emphasis on origins, activities, and impact of movements focusing on women, ethnic minorities, and the environment. SPRING. [3] Hunter. (Offered 2001/02)

234. Women, Politics, and the Development of the Third World. Analysis of the special problems afflicting women in the developing world and examination of proposed strategies, domestic and international, for reform. SPRING. [3] Hunter.

240. Political Parties. Theories of party formation, organization, and behavior. Historical development of party systems. Criteria for the comparative evaluation of party systems. Parties as instruments of citizen control. Implications for electoral outcomes, coalition formation, legislative decision-making, and public policy. FALL. [3] Palmquist.

241. American Public Opinion and Voting Behavior. The development and dynamics of political opinion and its effects on voting and public policy. Models of political behavior. SPRING [3] Layman.

242. Political Communication. The relationship of government and the press. Theories of communication; mass media and sociopolitical change; political persuasion and propaganda; responsibilities of the press. SPRING. [3] Pride.

243. Political Campaigns and the Electoral Process. Theories of representation and democratic accountability; electoral strategies and tactics, including political polling and analysis. FALL. [3] Pride.

244. The Legislative Process. Legislative organization and processes in the U.S. Congress. Attention to parties, elections, institutional structure, interest groups, and other branches of government as they relate to the legislative process. FALL. [3] Oppenheimer.

245. The American Presidency. Constitutional, historical, and political aspects. Attention to electing and nominating president, presidential leadership and personality, governing, and relations with Congress and the public. SPRING. [3] Geer.

247. American Political Culture. (Also listed as American and Southern Studies 247) Content, historical development, and political consequences of the American public's deeply rooted values concerning how the political system ought to work and the ends it ought to serve. Attention to regional variation. SPRING. [3] Pride.

248. Intentional Communities. (Also listed as American and Southern Studies 248) The utopian impulse in fact and fiction; formation of polities such as communes, cults, and eco-villages; alternative subcultures within the United States with special emphasis on the 1960s and 1990s. MAY. [3] Pride.

251. Regulations and Subsidies. Theoretical and empirical analyses of government activity. Governmental decisions affecting prices; pollution and other externalities; consumer protection; social insurance and agricultural subsidies. Political processes and policy outcomes. FALL. [3] (Not currently offered)

253. Ethics and Public Policy. Ethical argument in the public policy process; major approaches to ethics applied to specific issues of public policy. FALL. [3] Graham.

255. Public Policy Problems. Specific problems of public policies and their relations to political and institutional structures. Particular policy problems vary from semester to semester. May be taken more than once only if there is no overlap with a prior offering. FALL. [3] (Not currently offered)

261. Constitutional Interpretation. The nature and sources of constitutional law; judicial development of principles of distribution and scope of governmental powers; constitutional limitations and personal rights. Case method. FALL. [3] Birkby.

262. The Judicial Process. Functioning of the judiciary in the American political process; operation and powers of the courts; non-legal aspects of the judicial process; political role and effects of judicial decisions. Prerequisite: 261 recommended but not required. SPRING. [3] Birkby. (Offered 2001/02)

270. Conducting Political Research. Research sources, designs, and methods used by political scientists. Locating and accessing data, the logic of causal inferences, and basic data presentation and analysis. FALL. [3] Tucker.

280a–280b–280c. Internship. Under faculty supervision, students from any discipline gain experience with local, state, national, and international government offices or other politically related organizations. A thorough report and research paper are submitted at the end of the semester. Completion of 6 hours of political science, normally a 2.90 grade point average, and prior department approval of the student's plan are required.

280a. Internship Training. May be taken on a Pass/Fail basis only and must be taken concurrently with 280b. These hours may not be included in the minimum hours required in the Political Science major. FALL, SPRING. [Variable credit; 1–9]

280b. Internship Research. FALL, SPRING. [Variable credit; 1–3]

280c. Internship Readings. FALL, SPRING. [Variable credit; 1–3]

284. Contested Harmonies: Music and Political Thought. An investigation of the relationships between evolutions in musical language and concurrent developments in political thought. Illumination of the complex resonances between music and ideology. No musical background assumed. SPRING. [3] (Not currently offered)

287–288. Seminars in Selected Topics. Topics of special interest, as announced in the *Schedule of Courses*. Either or both 287–288 may be repeated for credit once if there is no duplication of topic. [3–3] Staff.

289a–289b. Independent Research. Development of a research project by the individual student under direction of a faculty sponsor. Consent of both the faculty sponsor and the director of undergraduate studies is required. Normally open only to majors in political science. FALL, SPRING. [Variable credit: 1–3, not to exceed a total of 6 in 289a–289b, 290a–290b combined.] Staff.

290a–290b. Directed Readings. Supervised reading and writing in a selected field of the discipline under the guidance of a faculty supervisor. Consent of both the faculty supervisor and the director of undergraduate studies required. Normally open only to majors in political science. FALL, SPRING. [3–3, not to exceed a total of 6 in 289a–289b, 290a–290b combined.] Staff.

299a–299b. Senior Honors Research. Open only to seniors in the departmental honors program. FALL, SPRING. [3–3]

300. Political Theory. [3]

302. Democratic Theory. [3]

308. Studies in Historical Political Thought. [3]

309. Research in Political Theory. [3]

310. Studies in Comparative Analysis. [3]

312. Comparative European Politics. [3]

313. Politics in Russian and Successor States. [3]

315. Research in Latin American Politics. [3]

316. Politics of Change in the Third World. [3]

317. Political Development and Democratization. [3]

318. Quantitative Methods and Small-N Analysis. [3]

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- 319. Research in Comparative Analysis.** [3]
- 320. International Politics.** [3]
- 321. International Conflict: Theories and Methods.** FALL. [3] Vasquez.
- 322. Peace Research.** SPRING. [3] Vasquez.
- 323. Current Theory and Research in World Politics.** [3]
- 325. International Political Economy.** [3] Barbieri.
- 329. Research in International Politics.** [3]
- 330. Studies in American Politics.** [3]
- 332. Political Parties and Electoral Behavior.** [3]
- 333. Political Culture, Opinion, and Behavior.** [3]
- 334. Executive Institutions.** [3]
- 335. Politics of American Legislation.** [3]
- 336. The Judicial Process.** [3]
- 339. Research in American Politics.** [3]
- 342. Policy and Politics.** [3]
- 355. Research Design.** [3]
- 356. Statistics for Political Research I.** [3]
- 357. Statistics for Political Research II.** FALL. [3] Palmquist.
- 358. Topics in Political Methodology.** [3]
- 359. Introduction to Formal Theory and Modeling.** [3]
- 360. Topics in Formal Theory and Modeling.** [3]
- 370. Topics in Political Science.** [3]
- 390a–390b. Independent Study.** FALL, SPRING. [Variable credit: 1–3 each semester]
- 398. Dissertation Seminar.** SPRING. [3]

Psychology

CHAIR Timothy P. McNamara

DIRECTOR OF UNDERGRADUATE STUDIES William F. Caul

DIRECTOR OF GRADUATE STUDIES Jeffery J. Franks

DIRECTOR OF CLINICAL TRAINING Andrew J. Tomarken

PROFESSORS EMERITI Richard L. Blanton, Keith N. Clayton, Martin Katahn,

Leslie Phillips, Hans H. Strupp, Leland E. Thune, Warren W. Webb

PROFESSORS Randolph Blake, John D. Bransford, Thomas G. Burish,

Vivien A. Casagrande, William F. Caul, Ford F. Ebner, Robert Fox,

Jeffery J. Franks, Steven D. Hollon, Jon H. Kaas, Joseph S. Lappin,

Gordon D. Logan, Timothy P. McNamara, Richard D. Odom, Oakley S. Ray,

Jeffrey D. Schall, William P. Smith

ASSOCIATE PROFESSORS Woo-kyoung Ahn, Marvin Chun, Sohee Park,

David G. Schlundt, Andrew J. Tomarken

RESEARCH ASSOCIATE PROFESSOR Sherre L. Florence

ASSISTANT PROFESSORS Jo-Anne Bachorowski, Denise Davis, Isabel Gauthier,

René Marois, Thomas J. Palmeri, David Zald

RESEARCH ASSISTANT PROFESSORS Kenneth C. Catania, Neeraj Jain,

Hans Peter Melzer, Iwona Stepniewska, Kirk G. Thompson

SENIOR LECTURERS Leslie M. Smith, N. Jane Zbrodoff

I PSYCHOLOGY is the scientific study of behavior and mental processes. At Vanderbilt the program of study for undergraduates introduces students to three major subdivisions of the discipline: cognitive science, clinical science, and neuroscience. Cognitive science includes the study of thought processes such as learning and remembering and the perception of objects and events in one's environment. Clinical science includes the study of personality, patterns of abnormal behavior, and therapeutic treatments. Neuroscience includes the study of the brain and how the actions of nerve cells directly mediate interactions between individuals and their environments. Within each broad subdivision there are courses on the development of behavior and its expression in adulthood, as these occur in individuals and as they are influenced by social situations.

In addition to course offerings in each of the three areas mentioned above, the Department of Psychology offers a wide variety of opportunities for undergraduates to participate actively in faculty research projects. This experience gives students a chance to try their hand at making an original contribution to knowledge in the field of psychology. Current detailed information concerning the content and format of courses is available from the department office.

Program of Concentration in Psychology

Students majoring in psychology may elect either Program I, the general major, or Program II, the major with a concentration in neuroscience. Both

programs require Psychology 101 or 115 and 208. Peabody students may substitute Peabody Psychology 2101 for 209 in either Program I or II.

Program I. The general major in psychology. This program requires a minimum of 30 hours.

1. Required: 101 or 115, 208, 209.
2. Twenty-one hours, including a minimum of one course from each of Areas A, B, and C listed below. No substitutions are allowed.

Areas:

A. *Cognitive Science*: 214, 222, 225, 226, 231, 277, 278, Peabody Psychology 1630.

B. *Clinical Science*: 211, 215.

C. *Neuroscience*: 201, 216, 232, 236.

Program II. The major in psychology with a concentration in neuroscience. This major is intended for students seeking advanced training in fields related to the brain and behavior, such as neuroscience, neuropsychology, neurobiology, or medicine. Students must complete courses in the basic concepts and methods of psychology, courses in neuroscience, and courses in biological or other natural sciences relevant to neuroscience. This program requires a minimum of 30 hours.

1. Required: 101 or 115, 208, and 201.
2. Either 209 or 234.
3. At least one course each from areas A and B listed above. No substitutions are allowed.
4. Fifteen hours from 214, 216, 232, 235, 236, 258, 259, 261, 269a, 269b, 272, 274, 278, 279, and 285; up to six hours of 290–291 or 295a–295b in a neuroscience laboratory; Biology 230 or 252. Psychology 214, 277, or 278 may also satisfy the requirement in area A.
5. Biological Sciences 110a–110b.

Students who plan to pursue graduate work in psychology are advised to take one of the advanced laboratory courses: 234, 253, or 254.

Honors Program

The honors program offers unusual opportunities for interested students, including special seminars, certain graduate courses, and individual research projects in collaboration with faculty members. Majors in psychology are eligible to apply for the honors program at the end of their sophomore year if they have a grade point average of at least 3.000 in all courses and in psychology courses. Students who complete the program successfully and who have a final grade point average of at least 3.000 will receive Honors or High Honors in Psychology. The program should substantially aid those intending to do graduate work.

Minor in Psychology

The minor in psychology is intended for those students who want to gain an overview of the science of psychology and its methodological foundations, and to sample more advanced work in the areas of specialization within psychology at Vanderbilt.

Students are required to complete 18 hours of course work inside the department, distributed as follows:

Psychology 101 or 115	3
Psychology 208 and 209	6
Two courses selected from the list of area courses specified for the major	6
One additional course at the 200 level or above	<u>3</u>
Total hours:	18

Students who are interested in a broad exposure to psychology may elect one course from each of the three areas listed for the major to fulfill requirements 3 and 4. Those who desire a more specialized exposure may elect two or even all three courses from within the same area. Students may elect undergraduate seminars (Psychology 280–289 or 297) to fulfill requirement 4, but not Directed or Independent Study (Psychology 290, 291, 292, and 293).

Starred course 101 (or 115) is prerequisite for all other psychology courses except 115a. Although 101 and 115 cover the same material and either contributes to satisfaction of the College Program requirement in Social Sciences, neither can be taken to replace a grade earned in the other. Course 115a is a special topics seminar that does not contribute to satisfaction of the requirement in Social Sciences or serve as prerequisite for other psychology courses.

★101. General Psychology. A survey of modern scientific psychology. Topics include development, perception, motivation, learning, thinking, remembering, emotion, intelligence, special aptitudes, and personality development. General applications to human behavior. The student must either analyze published research or be a subject in current research. No credit for both 101 and 115. FALL, SPRING. [3] Fox, Ray, McNamara.

★115, 115a. Freshman Seminar. No credit for both 101 and 115. [3]

201. Neuroscience. (Also listed as Neuroscience 201) A comprehensive introduction to the field of neuroscience from important molecules to cell function to neural systems to cognition. Topics include the physiology of nerve cells, the sensory systems of vision, audition and touch, the motor system, sleep, consciousness, speech and sexual behavior. Coverage of clinical topics includes the chemical basis of the psychoses, diseases of the brain, and repair mechanisms after brain injury. FALL, SPRING. [3] L. Smith, Marois.

208. Principles of Experimental Design. An introduction to theory and research methods in psychological science. Topics include philosophy of science, ethical issues, experimental design, and data interpretation. Not open to students who have received credit for Psychology 213. FALL, SPRING. [3] Blake, Gauthier.

209. Quantitative Methods. Introductory survey of principles and methods for the statistical analysis of experiments, with emphasis on applications in psychology. Major topics are descriptive and inferential statistics. Prerequisite: 208. FALL, SPRING. [3] Franks.

211. Personality. Introduction to the study of personality. Major theories of personality development, methods of assessment, and results of research. The study of normal behavior is emphasized. [3] (Not currently offered)

214. Perception. Current theory and research in sensation and perception, including an analysis of philosophical and biological issues. Understanding how biological organisms acquire, process, and use information about objects and events in the environment. Vision, audition, taste, smell, and touch. FALL, SPRING. [3] Fox, Blake.

215. Abnormal Psychology. Introduction to the study of deviant behavior. Topics include definitions of adequate human functioning, processes that disrupt functioning, and methods of evaluation and treatment. No credit for students who have taken 115a Section 2 (Abnormal Psychology). FALL, SPRING. [3] Hollon, Bachorowski.

216. Movement. Psychological, computational, and neural perspectives on the activities of looking, reaching, grasping, speaking, smiling or frowning, walking and running. FALL. [3] Schall.

222. Learning and Memory. An analysis of the major theories and research results related to learning and memory. [3] (Not currently offered)

225. Cognitive Psychology. Attention, pattern recognition, knowledge representation, language, reasoning, and human intelligence. FALL, SPRING. [3] Palmeri, Zbrodoff.

226. Thinking and Reasoning. A survey of research findings, theories, and empirical approaches to understanding how we "think." Deductive reasoning, decision making, categorization, problem solving, and human rationality. FALL. [3] Ahn.

231. Social Psychology. The influence of social conditions upon behavior in interpersonal and group relations; perception, judgment, learning, and attitudes. FALL. [3] W. Smith.

232. Cognitive Neuroscience. Introduction to the interdisciplinary field of cognitive neuroscience. How the brain supports cognition, perception, attention, memory, language, thought, action, and consciousness. SPRING. [3] Chun.

234. Laboratory in Behavioral Neuroscience. Lectures and accompanying experiments to demonstrate basic neural and endocrine regulation of behavior. Prerequisite: 201. SPRING. [3] Schall.

235. Biological Basis of Mental Disorders. Recent discoveries of brain changes that alter mental functioning. How a malfunctioning brain can produce suicidal behavior, mood and anxiety disorders, schizophrenia, alcoholism, and sexual dysfunction. How drug abuse results in altered brain chemistry and how organic brain diseases such as epilepsy, AIDS, or stroke can cause cognitive impairment. Prerequisite: 201. SPRING. [3] L. Smith.

236. The Visual System. (Also listed as Electrical and Computer Engineering 225) An interdisciplinary approach to how humans see and interpret their visual environment. Topics include the structure of the eye and brain (including optics), the physiology of individual cells and groups of cells, machine vision and models of visual function, visual attention, and mechanisms of complex visual perception. Lectures by faculty from Psychology, Engineering, and Cell Biology. SPRING. [3] Lappin (Psychology), Casagrande (Cell Biology).

240. Cognition, Consciousness, and Self. Perspectives from Buddhist psychology, cognitive, physical, and biological science. FALL. [3] Franks.

242. Psychology of Language. Introduction to psycholinguistics. Topics include the structure of languages, perception of speech, syntactic processing, comprehension, production

of speech, acquisition of language by children, hemispheric lateralization, aphasia, and communication by animals. Prerequisite: 222 or 225. [3] (Not currently offered)

244. Introduction to Clinical Psychology. Historical foundations, professional ethics, principles of clinical assessment and therapy, and areas of specialization such as health psychology. [3] (Not currently offered)

245. Emotion. Introduction to the study of emotion. Topics include defining emotion, functions of emotion, emotion and health, emotion and psychopathology, individual differences, and emotional development. Repeat credit for students who have taken 288: Emotional Processes. [3] (Not currently offered)

250. Control of Human Behavior. Factors determining the behavior of human groups and individuals. Emphasis on research on the effectiveness of methods such as psychotherapy, programmed learning, brainwashing, teaching, and propaganda procedures. Attention to applications as well as to theoretical bases of the methods. Ethical and moral issues relating to the control of human behavior. [3] (Not currently offered)

252. Human Sexuality. (Also listed as Women's Studies 252) The physiological, psychological, and cultural bases of sexual behavior. History of sexuality, gender roles, sex in human relationships, diagnosis and treatment of sexual disorders and dysfunctions, cross-cultural perspectives, pornography, rape, AIDS, and homosexuality. FALL. [3] L. Smith.

253. Laboratory in Cognition. Applications of experimental methods to the study of human cognition. Attention, short-term memory, long-term memory, implicit memory, knowledge representation. Prerequisite: 208, 209, and either 222, 225, or 278. [3] (Not currently offered)

254. Laboratory in Perception. Applications of experimental methods to the study of human perception. Psychophysical techniques, signal detection theory, direct and indirect scaling, chronometric analyses. Prerequisite: 208, 209, and 214. [3] (Not currently offered)

258. Animal Behavior and Evolutionary Psychology. A comparative and phylogenetic approach to the study of behavior, with special emphasis on sensory processes, instinctive behavior, the genetics of behavior, and ethology. SPRING. [3] Kaas.

261. Drugs and Behavior. The field of psychoactive drugs is surveyed, with particular emphasis on the behavioral effects of these agents. SPRING. [3] Ray.

265. Introduction to Psychological Assessment. Issues and strategies surrounding the psychological tests most commonly used in psychology, education, and business. Topics include testing of intelligence, measures of personality and psychopathology, assessment of abilities and aptitudes. [3] (Not currently offered)

266. Interpersonal and Intergroup Relations. (Also listed as Sociology 262) An examination of social psychological literature related to intergroup and interpersonal conflict and its resolution, with special attention to problems of relations between black and white in contemporary society. SPRING. [3] W. Smith.

267. The Delivery of Psychological Services. Introduction to methods of psychological assessment, intervention, professional ethics, and outcome evaluation. Lectures, reading, and class discussion are supplemented by practicum placements. Open only to psychology majors. Prerequisite: 211, 215, and consent of instructor. FALL. [3] Davis.

268. Health Psychology. The neurophysiological, endocrine, and immune systems; factors underlying health habits and lifestyles; methods to enhance health behaviors and prevent illness; stress management. Reciprocal interactions among behavior, thoughts, and physiology with resulting effects on physical and psychological health and illness. SPRING. [3] Ray.

269a–269b. Developmental Neuroscience and Psychobiology. 269a: Normal and abnormal brain development. Cell division, migration, cell death, synapse formation, plasticity, and clinical syndromes. 269b: Description, causes, and consequences of disorders in neu-

robehavioral development. The nature of developmental disabilities, their prevention, and management of disabling conditions. Prerequisite: 201. [3–3] Ebner.

272. Structure and Function of the Cerebral Cortex. Classic and current concepts of cerebral function. Species differences, receptive field organization, neurotransmitters, modifications by experience, and behavioral effects. Prerequisite: 201. [3] (Not currently offered)

273. Clinical Intervention. The three main schools of psychotherapy: dynamic, behavioral, and humanistic. Comparison of theories of disorder, theories of change, and techniques of treatment. [3] (Not currently offered)

274. Mammalian Neuroanatomy. Structure of the mammalian brain, including functional connections. Prerequisite: 201. [3] (Not currently offered)

276. Categories and Concepts. Categorization and conceptual thought processes examined from perspectives of cognitive psychology, developmental psychology, linguistics, anthropology, philosophy, and neuroscience. FALL. [3] Palmeri.

277. Brain Damage and Cognition. Effects of neurological impairment from stroke, injury, or disease on perception, speech, memory, judgment, and behavior. Relation between brain systems and cognitive systems. FALL. [3] Gauthier.

278. Cognitive Science. Interaction of cognitive psychology, artificial intelligence, neuroscience, and linguistics in explaining knowledge, perception, memory, and learning. Philosophical questions that arise in trying to understand the mind. Prerequisite: 101 or 115, Philosophy 100 or Computer Science 150. [3] (Not currently offered)

279. The Chemistry of the Brain. Current theory and the application of biochemical approaches to the study of neurotransmitters, neuromodulators, and drug actions in the nervous system. Prerequisite: 201. SPRING. [3] Wild.

Courses numbered 282–289 are seminars devoted to intensive study of special topics. Enrollment is restricted to majors, except with consent of instructor. Each seminar may be repeated once.

280. Special Topics in Perception. [3] (Not currently offered)

282. Special Topics in Cognitive Psychology. SPRING. [3] McNamara.

283. Special Topics in Developmental Psychology. FALL. [3] Odom.

284. Special Topics in Comparative Psychology. [3] (Not currently offered)

285. Special Topics in Physiological Psychology. FALL, SPRING. [3] Caul, Marois.

286. Special Topics in Human Competence. [3] (Not currently offered)

288. Special Topics in Clinical Psychology. FALL. [3] Bachorowski, Park.

289. Special Topics in Social Psychology. FALL. [3] W. Smith.

290–291–292. Directed Study. Participation in ongoing research projects under direction of a faculty sponsor. Consent of both the faculty sponsor and the director of undergraduate studies is required. Open only to juniors and seniors. FALL, SPRING. [Variable credit: 1–3 each semester] Staff.

293. Independent Study. Development of a project by the individual student under direction of a faculty sponsor. Consent of both the faculty sponsor and the director of undergraduate studies is required. Open only to juniors and seniors. FALL, SPRING. [Variable credit: 1–3 each semester] Staff.

295a–295b. Honors Seminar. Individual readings, reports, and seminar discussions of the basic areas of psychology. Selection of topics will provide some freedom to pursue individual interests. Open only to honors candidates. [3–3] Caul.

296a–296b. Honors Thesis. Participation with a staff member in work leading toward the senior thesis. This work may consist of readings and reports or active participation in research and will culminate in an independent research report. Open only to honors candidates. [3–3] Caul.

297. Senior Seminar. SPRING. [3] Schlundt.

300a–300b. Research Seminar. [Variable credit: 1–4 each semester]

301a–301b. Advanced General Psychology. [3 per section]

303. Models of Human Memory. [3]

304a–304b. Quantitative Methods and Experimental Design. [3–3]

309. Factor Analysis and Structural Equation Modeling. [3]

310. Research Methods in Clinical Psychology. [3]

312. Psychological Assessment. [3]

314. Theories of Psychotherapy I. [3]

315. Theories of Psychotherapy II. [3]

320. Advanced Research Seminar. [2]

323. Practicum in Psychological Assessment. [Variable credit: 1–5 each semester]

324. Practicum in Psychotherapy. [Variable credit: 1–5 each semester]

331a–331b. Advanced Investigational Techniques. [Variable credit: 1–3 each semester]

335. Special Topics in Neuroscience. [2]

343. Seminar: Perception. [3]

344. Seminar: Physiological. [3]

351. Seminar: Cognitive Psychology. [2]

352. Seminar: Clinical Psychology. [3]

353. Professional Ethics in Clinical Psychology. [3]

354a. Clinical Neuropsychology. [3]

354b. Neuropsychological Assessment. [3]

355. Seminar: Advanced Psychological Assessment. [3]

356. Seminar: Clinical Psychopharmacology. [3]

357. Seminar in Cognitive Science. [2]

358. Seminar in Neuroscience. [2]

360. Seminar in Clinical Science. [2]

361. Interdisciplinary Seminar in Social Psychology. [1–2]

Public Policy Studies

1 STUDENTS may choose an interdisciplinary program of concentration in public policy studies. The program includes courses in economics, political science, history, philosophy, sociology, and statistics. Students take elective courses focusing on public policy issues. The program is directed by Clifford S. Russell, Professor of Economics and chair of the Committee on Public Policy Studies.

Program of Concentration in Public Policy Studies

An interdisciplinary program of concentration in public policy studies consists of 39 hours approved by the chair of the Committee on Public Policy Studies (see Interdisciplinary Programs of Concentration).

The program of concentration consists of two parts: 24 hours of required core courses, and 15 hours of elective courses focusing on substantive policy issues. A student contemplating a program in public policy studies should take Economics 100 and 101 and Political Science 100 or 101 as prerequisites to the core. Individual courses included in the program may specify additional prerequisites. If one of the required courses is not offered, students may substitute with the permission of the chair.

Core Courses

Students are required to take Sociology 211 or HOD 1700; Economics 150 or Psychology and HOD 2101, or Math 218 plus 218L, or Sociology 127; Economics 231; Sociology 204; Philosophy 239 or Political Science 253; and three courses from the following set: Economics 285, Economics 279, Philosophy 253, Political Science 261, HOD 2100.

It is the intention of the Committee that students put together a coherent set of courses with a policy theme for the other 15 hours of the major. To this end, several "tracks" have been suggested by way of guidance, but students are not required to choose one of them. Examples include:

Environmental Policy (5 courses from the following): Biology 238; Economics 277, 283; Geology 106, 201; Political Science 215; Sociology 270. [Courses listed under the Environmental Studies Minor may also be included, subject to approval by the Chair.]

International Policy (5 courses from the following): East Asian Studies 240; Economics 263; History 282, 283; Latin American Studies 201; Political Science 102, 212, 222, 223, 228.

Justice Policy (5 courses from the following): Economics 267, 285; Psychology 215, 261; Sociology 231, 232, 233, 240.

Social Policy (5 courses from the following): Economics 267, 286; Philosophy 237; Psychology 267; Sociology 237, 251.

Students who find themselves interested in other policy areas, such as education, health, social security, or the military are encouraged to consult with the Chair because the availability of relevant courses will vary from year to year.

Honors Program

A student concentrating in public policy studies may apply for admission to the honors program. The admission, supervision, and evaluation of the student are subject to College regulations and will be the responsibility of both the Committee on Public Policy Studies and the Committee on the Honors Program in an appropriate participating department.

Religious Studies

CHAIR Volney P. Gay
PROFESSORS EMERITI Charles H. Hambrick, Lou Silberman
PROFESSORS Lewis V. Baldwin, J. Patout Burns, Volney P. Gay, Lenn E. Goodman,
Thomas A. Gregor, Howard L. Harrod, Daniel M. Patte
ASSOCIATE PROFESSORS Victor Anderson, Beth Ann Conklin, William Franke,
John D. Monaghan, Darren E. Sherkat
ASSISTANT PROFESSOR Paula Kane Robinson Arai
LECTURERS Jay Geller, Miriam Halachmi, Ron Messier, Gay House Welch
VISITING SCHOLAR Justin S. Ukpogon

I THE Department of Religious Studies offers courses that explore religion in cultures around the world and courses that train students in the intellectual skills relevant to such inquiry. Religion is the actions and thoughts people have toward that which they consider sacred, spiritual, or divine. Religion has inspired the rise of entire civilizations lasting thousands of years and the innermost experience of individuals in solitude. Religious Studies courses reflect this vast scope: they range from lecture courses that compare great world traditions, such as Christianity and Buddhism, to seminars that focus upon a single religious text, or upon a religious form, such as myth and ritual, or upon a method of inquiry such as textual criticism and other methods of interpretation.

Students majoring in Religious Studies have a dual focus: they study religious traditions and they acquire research methodologies such as textual crit-

icism, history, and the social scientific study of religion. Many students complete double majors, combining religious studies with history, anthropology, sociology, philosophy, or art. Many study abroad in Asia, the Middle East, or Europe and use their research in their senior projects. Religious Studies trains students to investigate world cultures and, by comparing cultures, understand theirs in depth. The multicultural and interdisciplinary character of Religious Studies makes it an excellent foundation to a liberal arts education.

Program of Concentration in Religious Studies

The 30-hour major in Religious Studies is designed with two goals in mind. We want our students to become literate in at least two prominent world religious traditions—their own may be one of the two. We also ask students to take courses that will familiarize them with the range of ways in which religion is studied and understood. A major in Religious Studies lays a solid foundation on which to build either a career in professions that demand contact with diverse populations, such as international business, medicine, social work, law, and education or graduate and seminary studies.

Students majoring in Religious Studies must complete at least 30 hours distributed as follows. The freshman seminar (115) may be counted toward the major in either Category 1 or Category 2, according to its topic. Students planning to pursue graduate studies are especially encouraged to take language courses.

Category 1. *Religious Traditions in Cultural Contexts*. Students complete a minimum of 15 hours, including at least two courses in each of two religious traditions from the following:

- a. Christianity: 103, 109, 131, 180, 201, 204, 209, 211, 212, 213, 214, 215, 216, 217, 221, 225, either Greek 202 or Latin 102 or equivalent
- b. Judaism: 106, 112, 131, 208, 221, 222, 225, 226, 227, 228, 229, Hebrew 111b, Elementary Hebrew II
- c. Islam: 113, 117, 131, 251, 252, 253, Arabic 210b, Introduction to Classical Arabic II
- d. Buddhism & East Asian Religious Traditions: 130, 132, 133, 150, 231, 244, 249, Japanese 212, Intermediate Modern Japanese
- e. African American Religious Traditions: 107, 110W, 114, 117, 205, 219, 250
- f. Native American Religious Traditions: 254, Anthropology 250, Anthropology 244, Anthropology 263

Category 2. *Religion and its Role in Human Life*. Students complete a minimum of 9 hours, including at least one course from each group.

- a. Critical Theories of Religion & Methods: 120, 121, 234, 235, 236, 237, 240, 256
- b. Ways in Which Religion Shapes the Thoughts, Lives, and Values of Practitioners: 140, 201, 202, 220, 223, 230, 231, 232, 238, 239, Anthropology 226, Philosophy 242, Sociology 246, Science, Technology, and Humanities 203

Category 3. *Senior Requirements*. A senior seminar (280, 3 hours) gathering majors during the fall semester of their last year.

Honors Program

The honors program in Religious Studies is designed to afford superior students the opportunity to pursue more intensive work within their major field. The program requires: a) a 3.0 cumulative grade point average; b) 6 hours of independent research, 299a–299b (Honors Research) normally taken during the senior year; c) an honors thesis to be completed by the spring of the senior year; d) successful completion of an honors oral examination on the topic of the thesis.

Minor in Religious Studies

18 hours. Students complete a minimum of 12 hours in Category 1 (see above—6 hours in each of two religious traditions). Students complete a minimum of 6 hours in Category 2 (see above—3 hours from each group). The freshman seminar (115) may be counted toward the minor in either Category 1 or Category 2, according to its topic. Students may elect to participate in the Senior Seminar (280) to be counted in Category 2.

102. Science and Religion in the Modern and Post-Modern World. The relationship between science and religion during the last two centuries. Truth, the nature of reality and the possibilities and limits of human knowledge. Compatibility of science and faith, scientific cosmologies (such as the Big Bang Theory) and Creation; twentieth-century physics and God; the place of humanity and human intelligence in the universe. [3] (Not currently offered)

103. Catholicism, an Historical Introduction. The development of Catholic piety, prayer and asceticism, of consecrated life, of ritual and liturgical practice in community. Institutions particular to Catholic Christianity (the papacy, the episcopate, territorial parishes, monasticism, and religious orders). Central doctrines (the Triune God, Christ as Savior, the interpretation of the Bible, and the sacraments). FALL. [3] Burns.

106. The Hebrew Bible and Its Interpretations. An examination of selected Biblical texts and how they have been understood through the centuries and in modern scholarship. Use of archeological, historical, and literary approaches. [3] (Not currently offered)

107. Introduction to African American Religious Traditions. Historical survey of the leadership, dynamics, and cultural milieu of African American religious traditions. Institutional expressions and theologies from the colonial period for the present. SPRING. [3] Baldwin.

108. Themes in the Hebrew Bible. A thematic introduction to the Hebrew Scripture/Old Testament. Selected themes—such as creation, revelation, covenant, law, suffering, messianic expectation—are traced through the diverse parts of the Bible (Pentateuch, Prophetic Writings, and Wisdom Literature) as well as in early Jewish texts. The comparison of the various expressions of these themes shows both the distinctiveness of each document and the continuity of the Biblical faith through the centuries. [3] (Not currently offered)

109. Themes in the New Testament. A comparative study of New Testament documents following central themes—such as salvation; evil and sin; the roles of Christ, God, and the

Spirit; discipleship; the church; sacred history. The distinctive teaching of each New Testament document as related to a concrete historical setting. Comparison with similar themes in Jewish and Hellenistic texts of that period. FALL, SPRING. [3] Patte.

110W. Introduction to Southern Religion and Culture. An exploration of the histories of evangelical and non-evangelical expressions in Southern religious culture from the colonial period to the present. The evangelical thrust of Southern culture, with some attention to Catholicism, Judaism, and other religious modes considered outside the mainstream of that culture. FALL. [3] Baldwin.

112. Introduction to Judaism. The Jewish religious tradition as it developed from Biblical times to the present. Emphasis on the rabbi as authoritative interpreter of Scripture. Discussion will include alternate modes of religious authority in Judaism such as mystical experience and messianism. Offered alternately with 222. [3] (Not currently offered)

113. Introduction to Islam. An historical overview of the different religious traditions in Islam, their basis in the Qur'an and life of the Prophet, their proliferation in the medieval period, and their response to the challenge of modernity. Topics include sunni and shi'i Islam, evolution of law and theology, sufism and political philosophy. Islam in Africa, India, Spain, and southeast Asia as well as the Middle East. [3] (Not currently offered)

114. Introduction to African American Philosophies of Religion. (Also listed as African American Studies 114) Contemporary African American religious thinkers. The idea of God, the problem of evil and suffering. The problem of divine revelation and religious knowledge, and the contributions of religion to problems of human identity and difference. FALL. [3] Anderson (Divinity School).

115, 115W. Freshman Seminar. [3]

117. Islam in the African American Experience. An introduction to expressions of Islam in the African American community from enslaved African Muslims in antebellum America to the Moorish Science Temple, the Nation of Islam, the Hanafis, the Five-Percenter, and other contemporary movements. Focus on doctrinal and institutional developments, and Islamic relationships with other African American religious groups and Islamic world. [3] Baldwin. (Offered 2001/02)

120. Religion, Sexuality, Power. Psychological, social scientific, and literary theories of how religious institutions control and channel human sexuality. Works by contemporary psychologists such as E. H. Erikson, L. Kohlberg, and social theorists such as C. Lévi-Strauss, M. Foucault, and S. Gilman are used to examine the central role of sexuality in religious training and religious institutions. FALL. [3] Gay.

121. Religion and the Discovery of the Individual. What it means to be a person or to be recognized as a full-fledged member of a group. Ways in which each culture defines personhood. The role of religious beliefs in providing criteria for defining, and of religious practices in providing ways to achieve, the status of personhood. Uses anthropological and psychological materials as well as religious autobiographies. [3] Gay. (Offered 2001/02)

130. Asian Religious Values in Contemporary Life. Asian religious values as they influence decisions in personal, political, business, and health matters. Analysis of how Buddhist, Confucian, Taoist, and Shinto religious teachings affect social mobility, international business, political conflict, and abortion. SPRING. [3] Arai.

131. Themes in Western Religions. Introduction to the three monotheistic religions—Judaism, Christianity, and Islam—that trace their roots to Biblical Israel. Comparison in terms of evolution of selected rituals and beliefs and the relation of religion to social, political, and cultural institutions. [3] (Not currently offered)

132. Religion and Culture in Japan. Short stories, poetry, tea ceremony as windows upon Japanese experience. Transformation of Buddhism through the centuries according to Japanese assumptions of human nature, reality, and concept of ultimate. The Christian experience in Japan studied in terms of the influence of Japanese cultural ideals. [3] Arai. (Not currently offered)

133. Asia on Film. (Also listed as East Asian Studies 133) Cinematic perspectives on Asian religion and culture, Hindu, Buddhist, Taoist, Shinto, and Confucian traditions in India, Tibet, Vietnam, China, Japan, and U.S. Politics and significance of representation and interpretation. FALL. [3] Arai.

140. Introduction to Western Religious Ethics. How major religions in the West have dealt with questions of personal morality and social justice. The main theological and philosophical traditions out of which Western religious moral thinking has taken shape. Varying approaches to specific problems such as abortion, war, euthanasia, and economic justice. [3] (Not currently offered)

145. Interfaith Dialogue and African American Culture. An examination of the lives, thought, and activities of Malcolm X and Martin Luther King, Jr., with special attention to their significance as sources of dialogue for Christians and Muslims. Of particular importance are the constructive insights that these leaders provide for those who wish to understand the two great faith communities and culture in the African American context. [3] Baldwin. (Offered 2001/02)

150. Medicine, Healing, and Spirituality. Cross-cultural inquiry into the perspectives of modern western scientific medicine and Asian healing and spiritual practices. Analysis of cultural and religious influences on the concepts of illness and health and the relationship of body and mind. Directed field research project. FALL. [3] Arai.

180. History of Christian Traditions. (Also listed as History 180) Christian traditions from the origins to the present. Such themes as christology, church and state, and the social and cultural contexts of changing Christian beliefs, and views of the Church. [3] Harrington (History). (Offered 2001/02)

201. The Problem of Biblical Authority. Past and present controversies over the authority of scripture. Comparisons of doctrinal statements about scripture with actual uses of it by believers, both in history and today's churches and synagogues. FALL. [3] Patte.

202. Natural Science and the Religious Life. How scientific discoveries and religious teachings are related. Descriptions of the physical universe from Aristotle through Albert Einstein are compared to contemporaneous definitions of the moral life by religious thinkers such as Thomas Aquinas, Martin Luther, Immanuel Kant, and Martin Buber. [3] (Not currently offered)

204. Protestant Conservatism and the Culture Wars. Evangelical traditions from the Reformation to their present manifestations in twentieth-century America. Debates concerning the authority of the scripture, the person of Jesus Christ, evangelism and soul-winning mission, revivalism and social reform, church-state relations, the relationship between science and religion, Biblical vs. "New" morality, and other areas of cultural cleavage. [3] Baldwin. (Offered 2001/02)

205. The Black Church in America. The development of the black church from the late eighteenth century to the present. Black denominationalism, church leadership, and the involvement of the church in the social, cultural, intellectual, political, and economic areas of African American life. FALL. [3] Baldwin.

208. The Hebrew Bible. Selective study of each of the three major divisions of the Hebrew Bible. The early Hebrew beginnings and development of the Law; the Prophets and their leading ideas in relation to social, political, economic, and religious tensions of their age; and the Wisdom books and later historical writing. FALL. [3] Weems (Divinity School).

209. The New Testament. Selective study of the New Testament writings, showing the main characteristics of early Christianity as compared and contrasted with early Judaism and Hellenistic religions. Themes include religious authority in early Christian communities and the types of faith and ethics found within the New Testament traditions. SPRING. [3] Patte.

211. Jesus and the Early Christian Communities. A study of the ways in which the Gospel writers presented the traditions about Jesus in response to contemporary events, cultural situations, and religious questions that were current in first-century communities. The relation of the Jesus of history to the Gospel portrayals. Prerequisite: 109 or 209 or its equivalent. [3] Levine (Divinity School). (Offered 2001/02)

212. The Pauline Interpretation of Christianity. An introduction to Pauline Christianity and its place in the early church, using the letters of Paul, the deutero-Pauline letters, and the portrait of Paul in Acts. Alternate prerequisite: 109 or 209. SPRING. [3] Patte.

213. Ethics of the New Testament. A study of the ethical teaching found in selected documents of the New Testament (such as the Sermon on the Mount, Luke-Acts, Paul's letters). A comparison of these documents in terms of the types of behavior expected of the believers and of the basis upon which their specific ethical teachings are established. [3] Patte. (Offered 2001/02)

214. Modern European Christianity. European Christianity since the mid-seventeenth century. Attention to influential political, social, cultural, and philosophical developments. Prerequisite: 107. SPRING. [3] Johnson (Divinity School).

215. Formation of the Catholic Tradition. The expansion of Christianity, the development of doctrine, relationships with the Empire, and changing modes of Christian life from the second century into the middle ages, with emphasis on the periods and themes that are formative of the classical doctrines and institutional patterns. Focus on positions and attitudes still important today (not only in Catholicism but in Protestantism), on differences between contemporary assumptions and the realities of Christian life and thought in the past. Prerequisite: 107. FALL. [3] Burns (Divinity School).

216. Christianity in the Reformation Era. The setting of the Reformation (c. 1500–1648) and its developments together with consideration of some of the significant ecclesiastical, theological, and historical issues of the period. Attention to backgrounds and causes and examination of major individuals and ecclesiastical patterns. The aim of the course is to help students understand and interpret the events, become familiar with some of the major theological documents, and reflect upon questions of continuing historical interest that have come out of the Reformation. [3] Johnson (Divinity School). (Offered 2001/02)

217. The History of Religion in the United States. History of organized religion in the United States from the adoption of the Constitution to the present time, with emphasis on the period from the Civil War to the present. [3] (Not currently offered)

219. Martin Luther King, Jr., and the Social Roles of Religion. King as religious leader and agent of social change. His views of the social roles of religion seen against the background of late nineteenth-century dissenting traditions and the early twentieth-century social gospel movement in America. Critical evaluations in terms of classical Christian views (e.g., Aquinas, Luther, Calvin, Wesley). SPRING. [3] Baldwin.

220. Ethical and Social Problems. Ethical and philosophical analysis of a range of contemporary social problems, such as poverty, violence, and homelessness. Implications for the construction of social policy. [3] (Not currently offered)

221. Law in the Hebrew Bible. Legal materials in the Pentateuch, their relation to the prophetic movement, and the role of law in ancient Israel's thought and society against the ancient Near Eastern background. [3] Knight (Divinity School). (Not currently offered)

222. Jewish Ethics. A study of the logic and basic values which, in the Jewish tradition, guide thinking about moral problems. Examination of family and social ethical issues found in Talmud and other Jewish classical texts. Basic religious views of modern Jewish thinkers and their relation to contemporary Jewish life. Offered alternately with 112. [3] (Not currently offered)

223. Ethics and Feminism. (Also listed as Women's Studies 223) Implications of gender theory for understanding the Judeo-Christian moral traditions. Topics include: the nature of the moral subject, the social construction of gender, patriarchal consciousness, the abuse of women, black feminism, motherhood, and feminist ecology. SPRING. [3] Welch.

225. Major Prophets of the Hebrew Bible. Study of Isaiah (1st and 2nd Isaiah), Jeremiah, and Ezekiel. Emphasis on historical context in which the Prophets lived and wrote, basic themes developed in their books, and on their relevance for our times. [3] (Not currently offered)

226. Jewish and Christian Self-Definition in Antiquity. Topics explored through investigation of primary sources of formative Judaism, early Christianity, and Roman paganism include; messianism, sectarianism, and the "historical Jesus," anti-Judaism, persecutions, debates over Law, Temple, Land, the "people of Israel," and salvation, the role of pagan society, canonization, symbol systems, and archaeology. Prerequisite: at least one of the following, 109, 112, 209, or equivalent. [3] Levine (Divinity School). (Not currently offered)

227. Religion and Politics in the Middle East: Land, Covenant, People. The interrelationship among religion, society, and politics in the contemporary claims to the Holy Land made by Jews, Christians, and Muslims. An introduction to the historical, social, and theological foundations of these claims will take place on the Vanderbilt campus. Students then will spend time in Israel in supervised research in the communities and with the organizations involved in the debate. A final paper or project offering an interpretation and analysis of the field data will be required. [3] (Not currently offered)

228. Judaism and Modernity. A historical and cultural analysis of the dilemmas that Jewish emancipation presented to both Jews and non-Jews in Europe, examined through the study of a variety of popular and elite cultural representations of Jews. How antisemitism became entangled with modern understandings of identity in terms of gender, sexuality, race, and class. [3] Geller. (Not currently offered)

229. The Holocaust: Its Meaning and Implications. An interdisciplinary study of the systematic destruction of the European Jewish communities during World War II. Historical, social, political, cultural developments which led to it. Psychological and sociological dimensions of its aftermath. Philosophical and theological problems it raises for both Jews and Christians. FALL. [3] Geller.

230. Women and Religion. (Also listed as Women's Studies 230) Themes and issues in the traditions and texts of selected western religions from a feminist perspective. Biblical and theological images of women, sources of religious authority, psychological and ethical implications of feminist approaches to religion. FALL. [3] Welch.

231. Women in Buddhist Traditions. (Also listed as Women's Studies 231) Buddhist traditions through the contributions and concerns of women in various cultural contexts (India, Sri Lanka, Thailand, China, Japan, and North America) and time periods (ancient and modern). Critical analysis of practices, texts, and hermeneutical schemes that foster divergent images of women. [3] Arai. (Offered 2001/02)

232. Feminist Interpretations of Scripture. (Also listed as Women's Studies 232) Issues, methods, and interpretations in contemporary feminist research on the Bible and on the history of early Christianity. Prerequisite: 108, 109, 208 or 209. FALL. [3] Levine (Divinity School).

234. Post-Freudian Theories and Religion. An examination of contemporary European and American schools of psychoanalysis. Focus on both the clinical and explanatory theories as they relate to the examination of religious experience. Recommended: 120 or 121. [3] Gay. (Not currently offered)

235. Freudian Theories and Religion. A critical assessment of psychoanalytic theories as an explanation of religious behavior. Study of the basic structure of these theories followed by a systematic critique of texts by Sigmund Freud and Erik Erikson. Examination of religious narrative forms. Recommended: 120 or 121. [3] Gay. (Offered 2001/02)

236. The Religious Self according to Jung. The religious core of human existence as related to the concepts of the archaic unconscious and the birth of the self in C. G. Jung's analytical psychology. Study of the life and thought of Jung as illustrated by his autobiography, *Memories, Dreams, Reflections*. Critical assessment of his theory as a means for understanding religious phenomena. FALL. [3] Gay.

237. Psychology of Religious Myth and Ritual. Examination of religious rituals and myths from both Christian and other traditions. Critical review of major psychological theories of ritual and myth. Their relevance to an understanding of myth and ritual as religious phenomena. [3] Gay. (Not currently offered)

238. Death, Religion, and Human Meaning. Views of death as fundamental ideas conditioning human attitudes toward existence. Theoretical responses of religion, philosophy, and modern thought. Readings and lectures from literature, medicine, and philosophy, as well as religion. [3] (Not currently offered)

239. Religious Autobiography. (Also listed as Humanities 239, Comparative Literature 239) The construction of identity in religious autobiography: motivations (personal salvation, witness, proselytism); relationships among self, God, and religious tradition; role of memory; cultural, gender, and religious differences. Readings may include Augustine, Gandhi, Malcolm X, Angelou, Wiesel. SPRING. [3] Geller.

240. What Is Religion? A consideration of the ways of studying religion and of the understandings of religion which lie behind these approaches. Resources for this investigation will be drawn from contemporary scholars and from the world's religions as interpreted by members of the department. Prerequisite: any course in religious studies, or Anthropology 226, or Philosophy 242. [3] (Not currently offered)

244. Buddhist Traditions. The thought, practice, and history of Buddhism from its beginnings in India through the development of its Theravada, Mahayana, and Vajrayana traditions to its present status in East and Southeast Asia. [3] Arai. (Offered 2001/02)

248. Themes in World Literature. (Also listed as Comparative Literature 202 and Humanities 202) Analysis and discussion of major themes in a selected number of the great works of literature, philosophy, and the arts which have been important to civilizations both Western and Eastern from antiquity to 1600. FALL. [3]

249. Zen Buddhism. A study of the development of Zen Buddhism in China and Japan with special attention to its basic philosophy, its position within Mahayana Buddhism, its meditational techniques, and its contemporary significance. SPRING. [3] Arai.

250. Black Islam in America. Varied expressions of African American Islam beginning with the bringing of Muslims as slaves from West Africa. Developments extending from the Moorish Science Temple to the Nation of Islam, other communities, and their leaders, including Malcolm X. [3] Baldwin. (Not currently offered)

251. Mysticism in Islam. Survey of the origins and development of the mystical traditions in Islam; the rise of asceticism; the early Sufis; the development and systematization of Sufi orders and teachings; the evolution of theosophical dimensions of mysticism; present day Sufism and its spread in North America; comparison of Islamic mysticism with other forms of mysticism. [3] (Not currently offered)

252. Islam in America. Islam in America from the bringing of Muslims as slaves from West Africa to contemporary American Muslim movements. The social, religious, political, and economic challenges that confront Muslims as a community with a double minority status. Muslim responses to racism. [3] (Not currently offered)

253. Introduction to Islamic Law and Theology. The development of Islamic law and the emergence of different schools of law in their respective sociopolitical contexts, and the gradual canonization of hadith literature. Islamic creed and distinct theological schools in early Islamic history; Hellenistic influences on Islamic theology; the theology of the Qur'an. Comparative study of Sunni and Shi'i theology. [3] (Not currently offered)

254. Native American Religious Traditions. A study of religious and value meanings embedded in selective Native American religious traditions such as Sioux, Blackfeet, and Navaho traditions. Differences between the Judeo-Christian worldview and Native American worldviews and sensibilities will be stressed. Comparative study of the aesthetic, symbolic, and existential dimensions of these traditions with those of other religious traditions. [3] Harrod. (Not currently offered)

256. Comparative Studies in Religion. Comparison of various religions focused on themes such as God, the human condition, history, salvation, ethics, scriptures, and religious communities; using materials from world's religions, East and West, past and present. Prerequisite: 130 or 131. [3] (Not currently offered)

280. Senior Seminar. Methods for studying religion and religious traditions. Open only to seniors with a major or minor in Religious Studies. FALL. [3] Geller.

289a–289b. Independent Study. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed a total of 6]

294. Special Topics in Religious Studies. [3] Staff.

295. Special Topics in Religious Studies. [3] Staff.

299a–299b. Senior Honors Thesis. Reading of primary research sources and writing an honors thesis under the supervision of the thesis adviser. Open only to senior honors students. FALL, SPRING. [3–3] Staff.

Science, Technology, and Humanities

COORDINATOR Richard F. Haglund Jr.(Physics and Astronomy)

I INTERDISCIPLINARY courses in science, technology, and humanities deal with the impact of science and technology on the arts, history, literature, philosophy, and politics. Courses will include critical analysis of significant texts and artistic works from the humanities as well as analysis of laboratory data, field experience, and computer simulations. Additional courses are currently being developed with the possibility of offering a minor in Science, Technology, and Humanities in future years.

101. Fundamental Issues in Science, Technology, and Humanities. Ethical, political, and economic issues in the interaction of science and technology with the cultural and social fabric of society. The integration of scientific and humanistic perspectives on human knowledge and experience. Case studies of conflicts between science and religion, ethical problems in the application of technology, and economic and political questions posed by scientific knowledge. SPRING. [3] Tuchman (History), Haglund (Physics and Astronomy). (Not currently offered)

115W. Freshman Seminar. [3]

190. The Evolution of Modern Technology. (Also listed as Engineering Science 190) Context and impact of the major technological developments since the mid-eighteenth century. SPRING. [3] Eakin (History), Kinser (Engineering Sciences).

203. Theories of the Universe. The interdependence of cosmological theories and religious teaching from the eighth century BCE to the end of the seventeenth century. Examines scientific works and religious texts, such as those of Aristotle, Thomas Aquinas, Copernicus, Luther, Galileo, and Newton. FALL. [3] Weintraub (Astronomy).

205. Risk, Science, and Policy. Formal and practical principles of risk analysis. Use and abuse of science in governmental regulations and civil litigation. Cultural and scientific constructions of risk. Case studies including silicone implantation, "drug lag," automobile emissions, and global warming. Prerequisite: Any one course in statistics (such as Mathematics 180 or Economics 150). Political Science 100 and Economics recommended but not required. FALL. [3] Gilligan (Physics and Astronomy), Walter (Political Science). (Not currently offered)

208. America in Space. Origins of space exploration in America. Interdisciplinary approach to how it has influenced and been influenced by American culture. Examines written, oral, and audio-visual forms of communication. [3] Neal. (Not currently offered)

260. Medicine, Culture, and the Body. Concepts of the human body from historical and cross-cultural perspectives. Exploration of experiences, representations, and medical theories of the body in birth, death, health, and illness in Western and non-Western societies. Comparison of methodologies of anthropology and history. SPRING. [3] Conklin (Anthropology), Tuchman (History). (Not currently offered)

Social Science

230. Introductory Physical Geography. Processes and patterns of physical geography, including weather and climate, landforms, soils, vegetation, and waters of the land. SPRING. [3] Staff.

232. Human Geography. Spatial manifestations of culture, including population distribution and movements, language, religion, livelihood, activities, urbanization, and environmental impacts. FALL. [3] Staff.

235. Human Geography of Sub-Saharan Africa. (Also listed as African American Studies 235) Spatial manifestations of a resilient cultural heritage and focus on sustainability of informal communities. Topics include indigenous political institutions, traditional medicine, population distribution and movements, geography and gender, and environmental impacts. SPRING. [3] Staff.

Sociology

CHAIR Daniel B. Cornfield

DIRECTOR OF UNDERGRADUATE STUDIES Holly J. McCammon

DIRECTOR OF GRADUATE STUDIES Karen E. Campbell

PROFESSORS EMERITI Ernest Q. Campbell, Jack P. Gibbs, William A. Rushing

PROFESSORS Daniel B. Cornfield, Walter R. Gove, Larry J. Griffin, Gary F. Jensen,

Richard A. Peterson, Ronnie Steinberg, Peggy A. Thoits

ASSOCIATE PROFESSORS George Becker, Karen E. Campbell, Francis Doodoo,

James J. Lang, Holly J. McCammon, Darren E. Sherkat

ASSISTANT PROFESSORS Barbara Stanek Kilbourne, Wayne A. Santoro, Sara M. Steen

SENIOR LECTURER Ramón Jrade

I SOCIOLOGY, the study of social relations, offers students a better understanding of their society and the consequences of social interaction. The department's courses cover a wide range of subjects: social problems and deviant behavior, including crime, delinquency, and mental illness; minority groups and race relations; methods of social research; cities, communities, and urbanization; occupations and the organization of work; migration, mortality, and fertility; social classes and stratification; organizations and associations; social psychology; and the social organization of religion, law, medicine, art, political activities, and business. Undergraduate courses in sociology prepare students for graduate work or further their preparation for a career in law, medicine, business, the ministry, nursing, social work, civil service, or teaching.

Program of Concentration in Sociology

Students majoring in sociology are required to complete 30 hours of work in sociology. The major consists of five types of courses: introduction to sociology; a course in theory; courses that emphasize research skills; courses that familiarize students with core areas of the field; and electives. In addition to these sociology courses, students must take a statistics course outside the department as part of their training in research skills. The statistics course does not count toward the 30 hours in sociology.

Course work for the major is distributed as follows:

<i>Introduction:</i> Sociology 101 or 102	3
<i>Theory:</i> Sociology 201	3
<i>Research Skills:</i> (3 courses)	
Sociology 211, followed by	3
Sociology 212 (or Independent Research 295a, or 295b, or 299)	3
Statistics (1 course)*	
Sociology 127 (or Math 127b, 180, or 218, or Economics 150)	(3)
<i>Core Areas:</i>	
Crime, Law, and Deviance:	
Sociology 224, 231, 232, 233, 234, 240	
Organizations, Politics, and Inequality:	
Sociology 235, 236, 244, 247, 249, 250, 251, 253, 254, 255	
Family, Medicine, and Mental Health:	
Sociology 220, 230, 237, 261, 262, 264, 265, 267	3
Culture and Social Change:	
Sociology 202, 203, 204, 241, 242, 246, 248, 256, 257, 258, 260, 270, 275, 277, 278, 291	
Students must take at least one course in three of the four core areas	9
<i>Electives:</i> Any 3 sociology courses not used to satisfy the above requirements	<u>9</u>
	Total hours 30

* Not included in the 30 hours.

Honors Program

The honors program offers superior students the opportunity to pursue intensive work within sociology. Students who meet the College requirements and are recommended for the program by the director of undergraduate studies will typically begin the program in the fall of their junior year. Interested sophomore majors who have a 3.0 grade point average in all courses and in sociology courses should contact the director of undergraduate studies for information.

Minor in Sociology

The minor in sociology is intended for those students who want to gain an overview of the discipline and to sample some of the special lines of study in it.

Students are required to complete 18 hours of course work inside the department, distributed as follows:

1. Sociology 101 or 102	3
2. Sociology 201	3
3. Four courses, including at least one from three of the four core areas listed above in the major	<u>12</u>
	Total hours 18

Licensure for Teaching

Candidates for teacher licensure in sociology at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

101. Introduction to Sociology. The study of human society; the nature of culture and its organization. Processes of communication, socialization, mobility, population growth. Credit not given for both 101 and 103. FALL, SPRING. [3] Staff.

102. Contemporary Social Problems. The impact of technological and social change and relatively high mobility in Western society. Deviation from social norms, conflict concerning social goals and values, and social disorganization as these apply to family, economic, religious, and other institutional and interpersonal situations. FALL, SPRING. [3] Staff.

103. Social Organization and Inequality. Contemporary sociological perspectives on the organization of inequality in American institutions, including the economy, work place, family, criminal justice system, health care system, and educational system. Examination of racial, ethnic, gender, and class dimensions. Credit not given for both 101 and 103. [3] (Not currently offered)

104. Men and Women in American Society. (Also listed as American and Southern Studies 104 and Women's Studies 104) This course focuses on ideas about masculinity and femininity and how these ideas carry with them inequalities in the distribution of power and resources available to men and women. We examine how gender permeates seemingly neutral aspects of everyday life—how we date, sexuality, family life, work relationships, political life, media images. FALL, SPRING. [3]

115, 115W. Freshman Seminar. [3]

127. Statistics for Social Scientists. Introduction to descriptive and inferential statistics with social science research applications. Coverage includes: sampling issues; describing data with measures of central tendencies and dispersion; hypothesis testing using categorical and continuous indicators; multivariate techniques for continuous categorical, and time dependent data. Prerequisite: Math 127a. FALL. [3] Sherkat.

201. Sociological Perspectives. Major classical and contemporary sociological perspectives such as symbolic interactionism, functionalism, and conflict sociology. Attention to the orientation and style of outstanding representatives of each perspective. Analysis in terms

of basic concepts, central questions, substantive themes, methodology, and bearing on contemporary social issues. SPRING. [3] Becker.

202. Sociolinguistics. (Also listed as Linguistics 202) The social dimension of language use. Variations in language produced by cultural, social class, sex, and age difference and by the occasion of the speech event. FALL. [3] Harris.

203. Perspectives on Women in the World. (Also listed as Women's Studies 201) The situation of women around the world examined through the lens of gender as a social construction. Topics include feminist critiques of knowledge, family and work, sexuality, health and medicine, the women's movement, and the future of feminism in a global context. FALL, SPRING. [3]

204. Self, Society, and Social Change. (Also listed as American and Southern Studies 204) Problems and prospects for individual participation in social change; volunteering, community service, and philanthropy; role of individuals and voluntary associations in social change. FALL. [3] Cornfield.

211. Introduction to Social Research. Theory, hypothesis formation, and measurement. Overview and evaluation of research strategies in sociology. The ethics of social research. Univariate statistics and cross tabulation, logic and interpretation of multivariate analysis. Prerequisite: major or minor standing in the department. FALL. [3] Thoits.

212. Research Practicum. Application of research skills acquired in 211. A research report, including statement of hypothesis, discussion of data and methods, and interpretation of results, is required. Prerequisite: 211 and a statistics course. SPRING. [3] Thoits.

220. Population and Society. The mutual influence of demographic factors and social structure. Trends in fertility, mortality, population growth, distribution, migration, and composition. Population policy and national development. FALL, SPRING. [3] Doodoo.

224. Women and the Law. (Also listed as American and Southern Studies 223 and Women's Studies 224) History of laws subordinating women and efforts by feminists to achieve substantive and procedural equity. American historical examples augmented by comparative research. Examines employment law, laws making rape and domestic violence illegal, and tax law. FALL. [3] Steinberg.

230. The Family. Study of the relationship of family structure to social organization. Comparative and historical approaches to the family. Recent changes in the American family. Courtship, marriage, marital adjustment, parenthood, and family dissolution in relation to contemporary American society. FALL. [3] Becker.

231. Criminology. The nature, distribution, causes, and control of crime with emphases on contemporary American society and a broad range of types of crime. FALL, SPRING. [3] Becker.

232. Delinquency and Juvenile Justice. The nature, distribution, causes and control of juvenile delinquency and the operation of the juvenile justice system in contemporary American society. SPRING. [3] Jensen.

233. Deviant Behavior and Social Control. The social causes of, and societal reactions to, several types of deviant behavior (e.g., juvenile delinquency, crime, sex deviance, mental illness). Examines the probable consequences of suggested solutions to reduce different types of deviant behavior. FALL, SPRING. [3] Gove, Steen.

234. Prison Life. Prison life from the perspective of prisoners, officials, and the society in which they operate. Off-campus visits to correctional sites, including the Riverbend Maximum Security Institution and the Correctional Officer Training Facility. FALL. [3] Jensen.

235. Contemporary American Society. Shifts in the political, economic, and social structure of the United States; changes in technology, demography, and social mores. [3] (Not currently offered)

236. Class, Status, and Power. Analysis of the competition for jobs, advancement, and income. The influence of social background, education, politics, race, sex, changes in the national economy, and other factors will be considered. Theoretical and empirical analysis focusing on the United States. [3] (Not currently offered)

237. Society and Medicine. Cultural and social factors in the perception, definition, diagnosis, treatment, and distribution of disease. Doctor-patient relations; role of nurses and other health professions. Social consequences of hospitals, medical technology, medical specialization, and health insurance. [3] (Not currently offered)

240. Law and Society. Examines the relationship between the legal system and other institutions with illustrations drawn from both American and other societies. The actual operation of the legal system including lawyers, courts, and police is described. FALL. [3] McCammon.

241. Art in Society. A description of the process of creating, displaying, merchandising, and evaluating art. Analysis of artist circles, production companies, training centers, patrons, critics, dealers, audiences, and government influences in the contemporary American scene as well as in other times and places. [3] (Not currently offered)

242. The Urban Community. Social organization of the urban community. Historical and contemporary patterns in the structure and growth of the city. World urbanism and social change. SPRING. [3] Jade.

244. Politics, State, and Society. The relationship between state and society; the nature and distribution of power in democratic society; the social conditions necessary for democracy; social movements and protest in political change; and the politics of public policy-making. Attention to political actions, definitions of citizenship, and political ideology. SPRING. [3] McCammon.

246. Sociology of Religion. Theories of the nature, function, and structure of religion. Religion in America, including fundamentalism, the Black Church, and cults. How religion changes and is changed by secular society. SPRING. [3] Sherkat.

247. Human Behavior in Organizations. (Also listed as Business Administration 247) Organizations are treated as resources in the production and distribution of goods and services. Case analyses from the economy are reviewed to diagnose "organizational pathologies" and to understand reciprocal impacts among organizational structures, leaders, and citizens. [3] (Not currently offered)

248. Popular Culture Dynamics. Examination of theories and research which link culture and society. Consideration of the mass media arts with particular emphasis on popular music. Focus on creators, industry, and audiences. FALL. [3] Peterson.

249. American Social Movements. The effect of key social movements on American society. Comparison of the organization and success of movements such as the American Revolution, Southern Secession, Populism, Woman's Suffrage, and Civil Rights. FALL, SPRING. [3] Santoro.

250. Gender in American Society. (Also listed as Women's Studies 250) Evolving gender stereotypes in American society, gender socialization throughout the life cycle, interpersonal relations, and contemporary social institutions. [3] (Not currently offered)

251. Women and Public Policy in America. (Also listed as Women's Studies 251) A study of public policies as they affect women in contemporary American society. Issues considered include participation of women in the labor force; effects of employment patterns on the family; birth control, abortion, and health care policies; child care; participation of women in political processes; divorce, child support, and custody; affirmative action policies; present governmental remedies and proposed alternatives. [3] (Not currently offered)

253. Gender, Work, and Culture. (Also listed as Women's Studies 253) Examination of current patterns and labor market trends and their structural, cultural, and historical determinants, with special emphasis on U.S. society. Explores how ideas of appropriate behavior of women and men shape opportunity, constrain change, and affect the value of work. Topics include segregation and inequality, work and family, sexual harassment, affirmative action, economic restructuring and the global economy. [3] (Not currently offered)

254. Schools and Society: The Sociology of Education. How schools affect individuals and relate to institutions: the government, the economy, social classes, and families. How social attributes, including race and class, affect academic achievement. Controversies such as desegregation and intelligence testing. [3] (Not currently offered)

255. Racial and Ethnic Minorities in the United States. (Also listed as African American Studies 255) Status of blacks, Asians, Hispanics, and other minorities. Migration, identity and association, and strategies to improve group status and reduce intergroup tensions. Comparisons to other countries. FALL. [3] Santoro.

256. Race, Gender, and Sport. (Also listed as Women's Studies 256) Manifestations of race and gender in sport. Emphasis on race and gender ideologies and the associated inequalities in sport in America. International comparisons for context. FALL. [3] Dodoo.

257. Gender, Sexuality, and the Body. (Also listed as Women's Studies 257) The body is a physical marker of gender and sexuality. Biological reproduction is saturated with social meanings—shaping ideas about masculinity, femininity, the gender division of labor, and heterosexuality. In this course, we will look at the body as reflexive project and as the site of historical and ideological significance. We address race, ethnicity, physical abilities and class in explaining variations in cultural ideals. FALL. [3] Steinberg.

258. The South in American Culture. (Also listed as American and Southern Studies 258) The changing relationship between the South and the rest of the country and its effects on understandings and definitions of the South, and changes in southern social structures and patterns, race relations, and economic and political institutions. SPRING. [3] Griffin.

260. The Individual and Society. How individuals, as social beings, are created by society and how society is in turn created and sustained by individuals. The social self, stigmas, deviance and identity, social structure and personality, small group processes, collective behavior. [3] (Not currently offered)

261. Work and Family in American Life. (Also listed as Women's Studies 261) The changing relationship between work and family from the Colonial era to the present. Role of the U.S. corporation, specialization of the family, sex roles, social mobility. [3] (Not currently offered)

262. Interpersonal and Intergroup Relations. (Also listed as Psychology 266) An examination of social psychological literature related to intergroup and interpersonal conflict and its resolution, with special attention to problems of relations between black and white in contemporary society. SPRING. [3] Smith.

264. Social Dynamics of Mental Health. Definition and classification of mental health and mental illness. Emphasis on social factors affecting mental health. Different ways of responding to persons in poor mental health and consequences of particular responses. SPRING. [3] Thoits.

265. Psychological Anthropology. (Also listed as Anthropology 265) How personality and culture affect each other. Socialization and the life cycle, the definition of sex roles, individual psychology and group aggression, religion and group personality, and the nature of mental illness and normalcy in non-Western societies. SPRING. [3] Gregor.

267. Seminar on Gender and Violence. (Also listed as Women's Studies 267) In-depth study of violence against women, with a service-learning component in a community setting. Topics include domestic abuse, rape, sexual harassment, pornography, and global violence. Focus on problems and potential solutions, examining violence on a societal, institutional, and individual level, interrogating the "personal as political," and exposing power structures which shape our communities. FALL, SPRING. [3] Piepmeier.

270. Human Ecology and Society. Demographic growth, social organization, technology, and the global environment. Sustainable agriculture, ecological degradation. Urban waste and recycling. Community-based approaches to development in Asia and Latin America. SPRING. [3] Gove.

275. Contemporary African Society. The influences of Europe, Asia, and the Americas on the shaping of contemporary African society. Emphasis on how traditional African institutions have persisted or been transformed over time. SPRING. [3] Dodo.

277. Contemporary Latin America. Distinctive features of contemporary Latin American societies. Recent historical background, political participation, economic growth, authoritarian regimes. Social indicators: health care, literacy, population growth, the distribution of wealth. The shifting context of the international system: foreign debt, trade, corporate investment, North-South vs. East-West tensions. [3] (Not currently offered)

278. Comparative Asian Development. (Also listed as East Asian Studies 278) The historical and cultural development of modern India, China, and Japan. Religious, social, and artistic traditions, contact with the West, independence, and modernization. [3] (Not currently offered)

280a–280b. Internship. Under faculty supervision, students gain experience in any of a variety of settings, such as civic, corporate, cultural, government, health, media, political, research, and social welfare organizations. Background reading and research will be completed in Sociology 280a concurrently with the completion of internship training, Sociology 280b. A minimum of 3 hours of 280a must be completed, independent of hours taken in 280b. Students may earn up to 6 hours of 280a credit. A research paper and report must be submitted at the end of the semester during which the internship training is completed. A 2.90 grade point average, completion of 6 hours of sociology, and prior departmental approval of the student's plans are required.

Sociology 280a. Internship Research and Readings. FALL, SPRING. [Variable credit: 1–6]

Sociology 280b. Internship Training. Offered on a pass/fail basis only and must be taken concurrently with 280a. Hours of 280b may not be included in the minimum hours counted toward the sociology major. FALL, SPRING. [1–9]

291. The Structure of Modern Spanish Society: An Introduction. After a historical introduction covering the years 1898–1939, present-day Spain will be studied with emphasis on topics such as the following: industrialization, emigration, influx of tourists, technocracy,

and the democratic process in post-Franco Spain. Offered only in the Vanderbilt-in-Spain program. [3] (Not currently offered)

294. Seminars in Selected Topics. May be repeated for credit once if there is no duplication of topic. [3]

295a–295b. Research Project. An individual research project designed to increase knowledge and skill in research. Prerequisite: 211 and a statistics course. Admission by consent of instructor and chair of the department. FALL, SPRING. [3–3] Staff.

296. Honors Research. Research and writing supervised by department staff culminating in the Senior Honors Thesis. Work consists of both background reading and active research. Open only to honors candidates. [Variable credit 3–6, not to exceed a total of 12.]

299. Independent Research and Writing. FALL, SPRING. [Variable credit: 1–6; may be repeated, not to exceed a total of 6]

The following courses are offered in years suited to graduate students in residence:

301. Classical Sociological Theory and Major Theorists. [3]

302. Contemporary Theory. [3]

310. Sociological Inquiry. [3]

311. Multivariate Analysis I. [3]

312. Multivariate Analysis II. [3]

313. Quantitative Methods Workshop. [3]

323. Teaching Workshop. [3]

331. Survey Seminar on Inequalities and Movements. [3]

333. Survey Seminar on Cultural Sociology. [3]

335. Survey Seminar on Deviant Behavior and Social Control. [3]

339. Survey Seminar on Political Sociology. [3]

341. Survey Seminar on Population Studies and Human Ecology. [3]

343. Survey Seminar on Social Psychology. [3]

345. Survey Seminar on Social Stratification. [3]

347. Survey Seminar on Sociology of Science and Knowledge. [3]

361. Special Topic Seminars on Social Phenomena at the Macro Level. [3]

363. Special Topic Seminars on Institutions and Organizations. [3]

367. Special Topic Seminars on Norms, Power, and Related Normative Phenomena. [3]

368. Special Topic Seminars on Social Processes and Social Change. [3]

371. Special Topic Seminars on Theory and Methodology. [3]

390a–390b. Directed Studies. [Variable credit: 1–3 each semester]

Spanish and Portuguese

CHAIR Cathy L. Jade

DIRECTOR OF UNDERGRADUATE STUDIES Philip D. Rasico

DIRECTOR OF GRADUATE STUDIES Andrés Zamora

PROFESSORS EMERITI J. Richard Andrews, John L. Bingham, C. Enrique Pupo-Walker

PROFESSORS John Crispin, Earl Fitz, Edward Friedman, Russell G. Hamilton,

Cathy L. Jade, William Luis, Philip D. Rasico, Francisco Ruiz-Ramón

ASSOCIATE PROFESSOR Victoria A. Burrus

ASSISTANT PROFESSORS M. Francille Bergquist, Andrés Zamora

VISITING ASSISTANT PROFESSOR Deborah N. Cohn

SENIOR LECTURERS Todd Hughes, Elena Olazagasti-Segovia, Cacilda M. Rego

I THE Department of Spanish and Portuguese offers a wide range of courses in the language, culture, and literature of Spain and Spanish America and is well known for the excellence of its program in Portuguese and Brazilian studies.

The department offers programs of concentration in both Spanish and Portuguese. Spanish majors specialize either in literature and culture or in language and culture; the latter specialty includes theoretical courses in Spanish phonology, morphology and syntax, dialectology, and history of the Spanish language. Two courses in Catalan are also offered. Qualified Spanish majors may elect to take graduate courses or participate in honors work.

The department serves majors from the Center for Latin American and Iberian Studies and the Center for European Studies. On the graduate level, the department offers the Master of Arts and Master of Arts in Teaching in both Spanish and Portuguese, a doctoral program in Spanish, and a combination doctoral degree in Spanish/Portuguese.

The department has chapters of two national honor societies—Sigma Delta Pi for students of Spanish and Phi Lambda Beta for students of Portuguese.

Many students participate in the Vanderbilt-in-Spain program. Activities organized by the department or by the Spanish Majors Association include lectures, films, and symposia. Every other year, students and faculty produce, direct, and act in a Spanish play. Students are urged to apply for living space in the Spanish Hall of McTyeire International House.

Program of Concentration in Spanish

Spanish majors choose between two programs of concentration: Program I and Program II. The basic requirement for both programs is a minimum of 30 credit hours in Spanish courses above 200. The distribution requirements are as follows:

Program I. Concentration in Spanish Language, Literature, and Culture.

1. Core requirements: 201, 202, and 203.
2. Literature: Nine hours from courses numbered 230–281 or 294.
3. Culture: Three hours from courses numbered 221–226. Students may substitute a literature course numbered 230–281 or 294.
4. Language: Three hours from courses numbered 206–213. Students may substitute another literature course numbered 230–281 or 294, or another culture course numbered 221–226.
5. Linguistics: Three hours from courses numbered 214–220 or 295.
6. Electives: Three hours from courses numbered above 200 (except 293). Students may substitute a course in either Portuguese (102 or higher) or Catalan (102 or higher).

Program II. Concentration in Spanish Language, Linguistics, and Culture.

1. Core requirements: 201, 202, and 203.
2. Linguistics: Six hours from courses numbered 214–220 or 295.
3. Language: Three hours from courses numbered 206–213. Students may substitute a linguistics course numbered 214–220 or 295.
4. Culture: Three hours from courses numbered 221–226. Students may substitute another linguistics course numbered 214–220 or 295, or another language course numbered 206–213.
5. Literature: Six hours from courses numbered 230–281 or 294.
6. Electives: Three hours from courses numbered above 200 (except 293). Students may substitute a course in either Portuguese (102 or higher) or Catalan (102 or 200).

A more advanced composition course may be substituted for 201. A more advanced conversation course may be substituted for 202. Spanish 203 is prerequisite for all literature courses offered by the department, except the 224–225 surveys given in Vanderbilt-in-Spain. Students must take Spanish 201, 202, and 203 in order to participate in Vanderbilt-in-Spain. Seniors are eligible to take one or two graduate-level courses (300 and above) with the approval of the instructor and the chair of the department.

Honors Program in Spanish

Candidates for Honors in Spanish who meet college and departmental requirements must complete 36 hours in Spanish courses numbered above 200. Students satisfy the requirements of the 30-hour major in Spanish language, literature, and culture (Program I) or Spanish language, linguistics, and culture (Program II), in which one of the required literature courses is either the undergraduate seminar, Spanish 280, which may be taken during either the junior or senior year, or a graduate seminar (300-level course) approved by the adviser to the honors program, which may only be taken during the senior year. (If Spanish 280 has not been available, it may, with permission of the adviser to the honors program, be substituted by an

“enriched” undergraduate literature course in which the instructor assigns outside research and a second or longer term paper to an honors candidate.)

The remaining 6 hours of the honors major consist of a senior honors thesis, which is completed during the senior year as independent study (Spanish 299a–299b) under the direction of a faculty adviser. Candidates must submit a proposal for the thesis to their prospective faculty adviser no later than the second semester of their junior year. The completed thesis must be submitted within the second semester of the senior year (deadlines are available from the department). An oral examination on the thesis and the general area of research, administered by a committee of the department, will follow.

Minor in Spanish

The minor in Spanish consists of a minimum of 18 credit hours. The specific requirements are as follows:

Spanish 201 (A more advanced composition course may be substituted)	3
Spanish 202 (A more advanced conversation course may be substituted)	3
Spanish 203	3
One advanced Spanish literature course (230–281, 294)	3
One advanced course in Spanish linguistics (214–220, 295)	3
One additional course in civilization, literature, or language/linguistics, chosen from courses that count toward the major (206–281, 294–295)	<u>3</u>
Total hours	18

Minor in Portuguese

The minor in Portuguese consists of a minimum of 15 credit hours. The specific requirements are as follows:

Portuguese 200 (intermediate grammar; a more advanced language course may, subject to approval by the department, be substituted)	3
Portuguese 205 (Introduction to Luso-Brazilian Literature)	3
Portuguese 223 (culture and civilization of the Portuguese-speaking world)	3

At least six additional hours selected from among other 200-level courses (three of which are listed below); one 300-level graduate course or seminar may, with the permission of the minor adviser, be included:

Portuguese 232 (introduction to Brazilian literature), 285 (modern Brazilian literature), 294 (special topics), 385 (seminar).

Program of Concentration in Spanish and Portuguese

This major focuses on the two dominant languages (Spanish and Portuguese) of Latin America and their literatures and cultures (those of Spanish America and Brazil).

The basic requirement for this major is a minimum of 33 credits in Spanish and Portuguese numbered 200 or above. The distribution is as follows:

1. Core requirements of Spanish 201, 202, and 203; Portuguese 200 and 205.
2. At least two of the following Spanish courses: 223, 235, and 236.
3. At least two of the following Portuguese courses: 223, 232, 285, and 385.
4. Spanish/Portuguese 293.
5. One elective to be chosen from Spanish 223, 235, 236 and from Portuguese 223, 232, 285, 385. A student may also choose a Spanish or Portuguese 294, if the topic relates to Latin American literature and/or culture.

Under exceptional circumstances a student may request permission from both the Director of Undergraduate Studies and from the Chair to replace a requirement in area 2 or 5 with another advanced-level Spanish course or to replace a requirement in area 3 or 5 with another advanced-level Portuguese course.

Program of Concentration in Spanish and European Studies

Students in Spanish may elect this interdisciplinary major, which requires a minimum of 42 hours of course work. A semester of study abroad in Vanderbilt-in-Spain is recommended.

Course work for the major is distributed as follows:

Spanish

Spanish language and literature core courses (9 hours): Span 201, 202, and 203 (212 may be substituted for 201; 207 or 208 may be substituted for 202)

Spanish culture and civilization (6 hours):

Two of the following: Span 204, 221, 226; Fine Arts 237*, 238*
(*offered in Vanderbilt-in-Spain)

Spanish literature (6 hours): Two Spanish courses numbered from 230–281 or 294

Elective (6 hours): Two additional Spanish courses which count towards the Spanish major.

Students may substitute one course in either Portuguese (102 or higher) or Catalan (102 or higher).

Total in Spanish: 27 hours

European Studies

European Studies core courses (6 hours): EUS 201 and 250

Social Science (3 hours): One course in economics, political science, or sociology selected from the list of social science courses approved for European Studies

History (3 hours): One of the following: History 213, 216, 218, 225, 226, 228, 259a*, 259b* (**offered in Vanderbilt-in-Spain*)

Elective (3 hours): One additional course in European Studies from those listed above under Social Science and History

Total in European Studies: 15 hours

Program of Concentration in Spanish, Portuguese, and European Studies

Students in Spanish and Portuguese may elect this interdisciplinary major, which requires a minimum of 42 hours of course work. A semester of study abroad in Vanderbilt-in-Spain is recommended.

Course work for the major is distributed as follows:

Spanish

Spanish language and literature core courses (9 hours): Span 201, 202, and 203 (212 may be substituted for 201; 207 or 208 may be substituted for 202)

Spanish culture and civilization (3 hours):

One of the following: Span 204, 221, 226; Fine Arts 237*, 238* (**offered in Vanderbilt-in-Spain*)

Spanish literature (3 hours): Any Spanish course numbered from 230–281 or 294

Elective (3 hours): Any additional Spanish course which counts toward the Spanish major

Total in Spanish: 18 hours

Portuguese

Portuguese language and literature courses (6 hours): Port 200 and 205

Portuguese culture and civilization (3 hours): Port 223

Total in Portuguese: 9 hours

European Studies

European Studies core courses (6 hours): EUS 201 and 250

Social Science (3 hours): One course in economics, political science, or sociology selected from the list of social science courses approved for European Studies

History (3 hours): History 213, 216, 218, 225, 226, 228, 259a*, 259b* (**offered in Vanderbilt-in-Spain*), 260

Elective (3 hours): One additional course in European Studies from those listed above under Social Science and History

Total in European Studies: 15 hours

Teacher Licensure

Candidates for teacher licensure in Spanish at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

Spanish

Entering students should consult their advisers or the Department of Spanish and Portuguese for advice on placement. Students who have not studied Spanish in high school should begin their studies at Vanderbilt in Spanish 101a. Students with high school Spanish on their records must present an achievement test score in Spanish to be placed correctly.

101a–101b. Elementary Spanish. Elements of grammar, pronunciation, reading, and writing, with emphasis on the use of practical oral Spanish. Five hours of classes and one hour of individual work in the language laboratory. [5–5] Staff.

Starred course 104 is prerequisite for all Spanish courses numbered above 199. Spanish 203 is prerequisite for 231 and all higher-numbered literature courses.

★**104. Intermediate Spanish.** Review of Spanish grammar, with emphasis on composition, reading, and conversation. Classes meet five hours per week. Prerequisite: 101b. FALL, SPRING. [5] Staff.

105. Spanish for Native Speakers. Review of grammar, practice in composition, and reading. Conducted in Spanish and directed to native speakers of Spanish. Enrollment by departmental placement. [5] Olazagasti-Segovia.

115W. Freshman Seminar.

201. Intermediate Composition. A writing course with emphasis on syntax, idioms, and current Spanish usage. Prerequisite: 104. FALL, SPRING. [3] Staff.

202. Spoken Spanish. Development of oral fluency in Spanish through drills, discussions, memorizations, and presentations. Prerequisite: 201. FALL, SPRING. [3] Staff.

203. Introduction to Spanish and Spanish American Literature. Critical reading and methods of literary analysis. Selections cover all genres in several periods. Prerequisite: 201 and 202. FALL, SPRING. [3] Staff.

204. Introduction to Hispanic Cultural Studies. An examination of contemporary Hispanic culture through a variety of media (newspapers, magazines, comics, Web sites), arts, and entertainment. Prerequisite: 201 and 202. Not open to students who have studied in Spain. FALL. [3] Zamora.

206. Spanish for Business and Economics. Linguistic skills and cultural information for conducting business in the Spanish-speaking world. Basic syntactic and phonological structures within the context of business. Activities to develop written, oral, and aural skills in several areas, including finance, management, marketing, and tourism. Prerequisite: 201. FALL. [3] Hughes.

207. Advanced Conversation. An intercultural approach contrasting Spanish and American perspectives. Discussions and oral presentations on contemporary issues. For students with a high level of oral proficiency, especially those returning from the Vanderbilt-in-Spain program. SPRING. [3] Ruiz-Ramón.

208. Spanish through Film. Advanced conversation course using Spanish and Latin American films as the basis of advanced grammar review. Analysis of linguistic, historic, cultural, and social issues. FALL. [3] Olazagasti-Segovia.

212. Advanced Grammar and Stylistics. Review of advanced grammar and syntax through the stylistic analysis of literary texts from several genres and periods. Intended for advanced undergraduate and graduate students. Prerequisites: 201, 202, and 203 or equivalent. SPRING. [3] Olazagasti-Segovia or Zamora.

213. Translation and Interpretation. The art and practice of translation and interpretation dealing with materials from science, economics, politics, belles lettres, etc. Prerequisite: 201 and 202. SPRING. [3] Bergquist.

214. Dialectology. Formation, general characteristics, distinctive features, and geographical extension of the principal dialectal regions of Spain and Spanish America. Both historical and modern dialects are considered. Emphasis on non-standard dialectal varieties of Spanish. [3] Rasico.

216. Phonology. The phonetics and phonemics of the Spanish language. FALL. [3] Rasico.

217. Contrastive Analysis of Spanish and English. A comparison of the phonological, morphological, and syntactical structures of Spanish and English to demonstrate the similarities and differences between the linguistic systems of these two languages. FALL. [3] Bergquist.

218. Morphology and Syntax. Descriptive analysis of word formation and sentence construction in modern-day Spanish. [3] Rasico.

219. History of the Spanish Language. Origins and evolution of the Spanish (Castilian) language. Emphasis on the phonological and morphological development of Spanish within historical and cultural contexts of the Iberian Peninsula. [3] Rasico.

220. The Languages of Spain. Origins, development, and the contemporary sociolinguistic situation of the principal languages and dialects of Spain, including Castilian, Catalan, Galician, and Basque. SPRING. [3] Rasico.

221. Spanish Civilization. The development of Spanish culture from the Middle Ages to the present in the context of Western civilization. Discussion of historical background, literary and artistic trends, and political and socioeconomic patterns. Not open to students who have attended Vanderbilt-in-Spain. Prerequisites: 201 and 202. [3] Burrus.

223. Spanish American Civilization. The development of Spanish American culture from colonial times to the present; discussion of basic institutions, political and socioeconomic patterns, education, the arts, and folklore. Prerequisites: 201 and 202. [3] Jade.

226. Film and Recent Cultural Trends in Spain. The cinema and Spanish cultural evolution during and after the Franco dictatorship. Prerequisite: 203, 212, or Vanderbilt-in-Spain semester. [3] Crispin.

230. Development of Lyric Poetry. Popular and traditional forms; the sonnet and other Renaissance and Baroque classical forms. Romanticism. [3]

231. The Origins of Spanish Literature. From its beginnings to the Renaissance; the creation of a social order and a cultural tradition. Close study of three literary landmarks—*Poema del Cid*, *Libro de Buen Amor*, *La Celestina*—and other prose and poetry selections. [3] Burrus.

232. Literature of the Spanish Golden Age. Representative works from the Commedia, the Picaresque and other prose forms, and lyric poetry, in the cultural context of the Renaissance and Baroque eras. FALL. [3] Friedman.

233. Modern Spanish Literature. The eighteenth and nineteenth centuries: essays and Neoclassic literature, Romanticism, Realism, and Naturalism. Representative works and authors from all genres. [3] Zamora.

234. Contemporary Spanish Literature. Representative authors and works from the Generation of 1898 to the present. [3] Crispin.

235. Spanish American Literature. The development of all forms from colonial times to World War I. The different patterns of interaction of native American, African, and European cultural traditions. The unity and diversity of Spanish American literature. [3]

236. Contemporary Literature of Spanish America. All literary forms from World War I to the present. Emphasis on the works of Neruda, Borges, Paz, García Márquez, and others. FALL. [3] Jade.

237. Contemporary Lyric Poetry. From Modernism to the present in Spain and Spanish America. FALL. [3] Crispin.

239. Development of the Novel. From the seventeenth century through Realism and Naturalism in Spain and Spanish America. [3] Zamora.

240. The Contemporary Novel. New forms in the twentieth-century novel in Spain and Spanish America. SPRING. [3] Crispin.

244. Afro-Hispanic Literature. From nineteenth-century slave narrative to modern writers such as Miguel Barnet, Alejo Carpentier, and Quince Duncan. SPRING. [3] Luis.

246. *Don Quixote*. Directed reading and intensive study of the novel. [3]

251. Development of Drama. From the Spanish Golden Age through Romanticism. SPRING. [3] Friedman.

252. Contemporary Drama. Twentieth-century theatre. [3] Ruiz-Ramón.

260. Development of the Short Story. From early manifestations in Spain through its current forms in Spain and Spanish America. [3]

280. Undergraduate Seminar. Close contextual readings of major Hispanic literary texts through selected critical approaches. Open to junior and senior majors in Spanish; required of candidates for honors. [3] Staff. (Not currently offered)

281. The Theory and Praxis of Drama. Critical works and plays from different periods. Introduction to the principles of dramaturgy. [3] Ruiz Ramón.

289. Independent Study. Designed primarily for majors. Projects are arranged with individual professors and must be approved by the director of undergraduate studies, before the close of registration. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed 12 over a four-semester period] Staff.

294. Special Topics in Hispanic Literature and Culture. FALL, SPRING. [3] Staff.

295. Special Topics in Spanish Language and Linguistics. FALL, SPRING. [3] Staff.

299a–299b. Senior Honors Thesis. [3] Staff.

Seniors are eligible to take one graduate course or seminar in the last semester of their undergraduate program, subject to approval of the instructor of the course; of the department's director of graduate studies, who will assess the student's preparation; and of the Dean for Graduate Studies and Research. For further information on the courses listed below see the *Graduate School Catalog*.

301. Literary Analysis. FALL. [3] Zamora.

302. Ibero-Romance Philology. [3] Rasico.

303. Introduction to the Methods of Literary Research. FALL. [3]

310. Foreign Language Teaching: Theory and Practice. FALL. [3] Scott.

331. Seminar: Studies in Medieval Literature. [3] Burrus.

341. Seminar: Poetry of the Golden Age. [3] Friedman.

343. Seminar: Studies in Golden Age Drama. [3] Ruiz-Ramón.

345. Studies in Golden Age Prose: *Don Quixote*. Fall. [3] Friedman.

362. Seminar: The Realistic Novel of the Nineteenth Century. [3] Zamora.

371. Seminar: Studies in the Generation of 1898. [3] Staff.

372. Seminar: Studies in Twentieth-Century Spanish Literature. [3] Staff.

387. Seminar: Contemporary Spanish American Novel. SPRING. [3] Luis, Jrade.

388. Seminar: Special Topics in Spanish Literature. [3] Staff.

389. Seminar: Special Topics in Spanish American Literature. FALL, SPRING. [3] Jrade, Luis.

396. Seminar: Special Studies in Spanish Linguistics. [Variable Credit: 1–6]

397. Special Studies in Spanish Literature. [Variable Credit: 1–6]

398. Special Studies in Spanish American Literature. [Variable Credit: 1–6]

Vanderbilt in Spain Courses (Courses available only in Madrid)

★**200. Intensive Spanish.** A one-month intensive course in the Spanish language, meeting before regular classes begin. Emphasis is placed on conversation, reading, composition, and grammar. Offered only in the Vanderbilt-in-Spain program. Required of all incoming students. FALL, SPRING. [3]

★**209. The Spanish Language.** An advanced grammar course with emphasis on problem constructions, stylistics, and composition. Offered only in the Vanderbilt-in-Spain program. FALL, SPRING. [3]

★224. **Survey of Spanish Literature I.** FALL. [3]

★225. **Survey of Spanish Literature II.** SPRING. [3]

Courses in English Translation

293. Contemporary Latin American Prose Fiction in English Translation. (Also listed as Portuguese 293) A study of major themes and techniques of the contemporary fiction in Spanish America and Brazil. Does not count toward the hours required for a major or minor in Spanish or Portuguese. SPRING. [3] Fitz.

Portuguese

102. Intensive Elementary Portuguese. Intensive Elementary and Intermediate Portuguese. (formerly Portuguese 110a) An accelerated introduction to reading, writing, speaking, and listening. Emphasis on practical usage. Open to students with prior study of another Romance language or by permission of instructor. May be counted as an elective toward the major in Spanish. FALL. [5] Staff.

115W. Freshman Seminar.

200. Intermediate Portuguese. Review of Portuguese grammar with emphasis on conversation, composition, and reading of modern Portuguese literary texts. Prerequisite: 102 or equivalent. SPRING. [3] Staff.

205. Introduction to Luso Brazilian Literature. Critical readings and methods of literary analysis. Selections include masterpieces from Portugal and Brazil and cover all genres in several periods. Emphasis on improving conversational and writing skills. Prerequisite: 200. FALL. [3] Fitz, Staff.

207. Spoken Portuguese. Development of oral fluency in Portuguese through in-class drills, discussions, and presentations. Out-of-class work includes listening to and transcribing tapes, memorizing short dialogues, learning specific structures and vocabulary, and preparing original presentations on given topics. Prerequisite: 102. [3] (Not currently offered)

223. Culture and Civilization of the Portuguese Speaking World. Distinctive cultural patterns of the Portuguese-speaking world in a historical perspective; painting, sculpture, architecture, music, folkloric traditions, and major currents of intellectual thought. [3] Fitz, Staff.

232. Brazilian Literature through the Nineteenth Century. Main literary trends, principal writers and works of Brazilian literature, from colonial beginnings through the nineteenth century. Study of the works of Gregório de Matos, Gonçalves Dias, Alencar, Machado de Assis, and Euclides da Cunha. SPRING. [3] Fitz, Staff.

285. Modern Brazilian Literature. The development of Brazilian literature from the *Semana de Arte Moderna* to the present. Emphasis on the modernist and neo-modernist movements. FALL. [3] Fitz, Staff.

289. Independent Study. A reading course, the content of which varies according to the needs of the individual student. Primarily designed to cover pertinent material not otherwise available to the student in the regular courses of the curriculum. FALL, SPRING. [Variable credit: 1–3 hours, not to exceed 12 over a four-semester period]

294. Special Topics in Portuguese Language, Literature, or Civilization. FALL. [3] Staff.

Seniors are eligible to take one graduate course or seminar in the last semester of their undergraduate program, subject to approval of the instructor of the course; of the department's director of graduate studies, who will assess the student's preparation; and of the Dean for Graduate Studies and Research. For further information on the courses listed below, see the *Graduate School Catalog*.

301. Literary Analysis. [3]

302. Ibero-Romance Philology. [3]

310. Foreign Language Teaching: Theory and Practice. [3]

385. Special Topics in Luso-Brazilian Literature. SPRING. [3] Fitz.

397. Special Studies in Portuguese Literature. [Variable Credit: 1–6]

398. Special Studies in Brazilian Literature. [Variable Credit: 1–6]

Courses in English Translation

293. Contemporary Latin American Prose Fiction in English Translation. (Also listed as Spanish 293) A study of major themes and techniques of the contemporary fiction in Spanish America and Brazil. Does not count toward the hours required for a major or minor in Spanish or Portuguese. SPRING. [3] Fitz.

295. Special Topics in Portuguese and Brazilian Literature or Civilization in English Translation. Does not count toward a major or minor in Portuguese. [3]

Catalan

102. Intensive Elementary Catalan. Romance tongue of northeastern Spain, Andorra, and southwestern France. Emphasis on oral communication, grammar, reading, and culture. Prior study of another Romance language through the intermediate level is highly recommended. May be counted as an elective toward the major in Spanish. [3] Rasico.

200. Intermediate Catalan. Review of Catalan grammar with emphasis on conversation, composition, and reading of modern Catalan literary texts. Prerequisite: 102 or equivalent. [3] Rasico.

Teacher Education

1 STUDENTS interested in preparing for licensure as early childhood, elementary, special education, or secondary school teachers should meet with Associate Dean Francille Bergquist, College of Arts and Science, as soon as possible, to initiate discussion with appropriate personnel in teacher education.

Specific information on program requirements will be found under Licensure for Teaching in the Peabody College section of this catalog.

Early Childhood and Elementary Education

Students interested in preparing to teach early childhood or elementary school pupils major in a single discipline or an interdisciplinary program in the College of Arts and Science as well as in education at Peabody College.

Secondary Education

The College of Arts and Science and Peabody College offer teacher education programs leading to secondary school teacher licensure in the following fields:

English

Foreign Languages (French, German, Latin, Spanish)

Mathematics

Science (Biology, Chemistry, Earth and Space Science, Physics)

Social Studies (History, Economics, and Political Science). Psychology and

Sociology may become additional endorsement areas for students who also have selected history, political science, or economics as an endorsement area.

Students major in an academic discipline in the College of Arts and Science and complete a second major in education at Peabody College.

Special Education

Students interested in preparing to teach children with special needs major in special education at Peabody College. Areas of teacher licensure available are mild and moderate disabilities, multiple and severe disabilities, visual impairment, hearing impairment, and early childhood special education.

Women's Studies

PROFESSORS Thadious Davis, Gary Jensen, A.-J. Levine, Leah Marcus, Ronnie Steinberg, Cecelia Tichi, Nancy Walker, Susan Ford Wiltshire
 ASSOCIATE PROFESSORS Karen Campbell, Beth Ann Conklin, Kate Daniels, Caroline Dever, Frances Doodoo, Lynn Enterline, Wendy Hunter, Thomas McGinn, Maureen Needham, Mark Schoenfield, John Sloop, Arleen Tuchman
 ASSISTANT PROFESSORS Paula Arai, Tina Chen, Kathryn Crawford, Cynthia Cyrus, Anne Demo, Kathy Gaca, Barbara Kilbourne, Sheila Smith McCoy, Laura McDaniel, Michele Salisbury, Kathryn Schwarz, Gay Welch, Meike Werner
 SENIOR LECTURERS Tracy Barrett, Elizabeth Boyd, Yolette Jones, Linda Manning, Elena Olazagasti-Segovia, Candace Rosovsky, Diane Sasson
 LECTURERS Carol Manthey, Alison Piepmeier, Sandy Stahl

I WOMEN'S Studies is an interdisciplinary program that examines gender as a social construct, as historically variable, and as it orders human behavior, perceptions, and values. Women's Studies also takes, as a focus of inquiry, women's material, cultural, and economic production, their collective undertakings, and their self-descriptions. Women's Studies teaches its students to reexamine traditional beliefs, to engage in new kinds of research, and to bring a critical perspective to the practices that shape women's and men's lives. It recognizes as well that race, class, ethnicity, age, and sexual orientation are crucial aspects of women's and men's experiences. Because gender cuts across most areas of knowledge, students can raise similar questions within different disciplines, and by using various methodologies, achieve a deeper understanding of the complexity and wholeness of human experience. The field not only compels us to recognize the problems and possibilities of the world in which we live, but also empowers us to change the world. The Women's Studies Program offers a minor, and courses may also be taken as electives to complement a major. The minor provides an excellent foundation for students who plan on entering professional schools in law, medicine, and business, on pursuing advanced degrees in women's studies, the humanities and social sciences, or in moving into careers in business, government, teaching, health and social administration, counseling, journalism, and advocacy. The director of the Women's Studies program is Ronnie J. Steinberg, Professor of Sociology.

Minor in Women's Studies

The minor in Women's Studies consists of 18 hours of course work, distributed as follows:

Core Requirements:

Women's Studies 104 or 150	3
Women's Studies 224 or 251	3
Women's Studies 286 or 287	3

At least 9 hours from the following:

Women's Studies 201, 204, 205, 220, 223, 230, 231, 232, 233, 235, 239, 240, 242, 243, 244, 245, 246, 250, 252, 253, 255, 256, 257, 259, 260, 261, 266, 267, 270, 271, 295, MUSL 200, DANC 210

Women's Studies 224 or 251 (whichever was not counted above)

Women's Studies 286 or 287 (whichever was not counted above)

Women's Studies 104. Men and Women in American Society. (Also listed as American and Southern Studies 104 and Sociology 104) Masculinity and femininity and how these ideas influence the distribution of power and resources available to men and women. How gender permeates dating, sexuality, family life, work relationships, political life, media images. [3] Boyd.

Women's Studies 115, 115W. Freshman Seminar. [3]

Women's Studies 150. Images of Women. (Also listed as Humanities 156, Comparative Literature 150) An introduction to the study of images and roles of women in Western society as reflected primarily in literature and art. Readings and discussions concentrate on modern works that draw for background on Greek and Roman mythology, the Bible, medieval and renaissance materials. No prerequisite. FALL, SPRING. [3] Staff.

Women's Studies 201. Perspectives on Women in the World. (Also listed as Sociology 203) The situation of women around the world examined through the lens of gender as a social construction. Topics include feminist critiques of knowledge, family and work, sexuality, health and medicine, the women's movement, and the future of feminism in a global context. FALL, SPRING. [3] Staff.

Women's Studies 204. Women, Men, and Language. (Also listed as Linguistics 204) Language of women and men in the context of recent studies in cognition and society. Semantics, acquisition of gender-specific language behavior, and the roles of women and men in linguistic variation and change. Gender differences in conversational strategies. [3] Harris.

Women's Studies 205. Historical Perspectives on Women, Health, and Sexuality. (Also listed as History 205) Women as patients and healers. Emphasis on America, 1750 to the present. Topics include women's diseases and treatments, changing definitions of "women," sexuality, childbirth, birth control, abortion, midwives, nurses, and doctors. [3] Tuchman (History).

Women's Studies 220. Women, Sexuality, and the Family in Ancient Greece and Rome. (Also listed as Classics 220) The status and role of women, law and the regulation of the private sphere, sexuality and gender role, demography and family structure, marriage, children, religion, domestic architecture and the household economy, ancient critiques of the family, and the impact of Christianity. [3] McGinn.

Women's Studies 223. Ethics and Feminism. (Also listed as Religious Studies 223) Implications of gender theory for understanding the Judeo-Christian moral traditions. Topics include: the nature of the moral subject, the social construction of gender, patriarchal consciousness, the abuse of women, black feminism, motherhood, and feminist ecology. SPRING. [3] Welch (Religious Studies).

Women's Studies 224. Women and Law. (Also listed as American and Southern Studies 223 and Sociology 224) History of laws subordinating women and efforts by feminists to achieve substantive and procedural equity. American historical examples augmented by comparative research. Examines employment law, laws making rape and domestic violence illegal, and tax law. FALL. [3] Steinberg.

Women's Studies 230. Women and Religion. (Also listed as Religious Studies 230) Themes and issues in the traditions and texts of selected Western religions from a feminist

perspective. Biblical and theological images of women, sources of religious authority, psychological and ethical implications of feminist approaches to religion. FALL. [3] Welch (Religious Studies).

Women's Studies 231. Women in Buddhist Traditions. (Also listed as Religious Studies 231) Buddhist traditions through the contributions and concerns of women in various cultural contexts (India, Sri Lanka, Thailand, China, Japan, and North America) and time periods (ancient and modern). Critical analysis of practices, texts, and hermeneutical schemes that foster divergent images of women. [3] Arai (Religious Studies).

Women's Studies 232. Feminist Interpretations of the Bible. (Also listed as Religious Studies 232) Issues, methods, and interpretations in contemporary feminist research on the Bible and on the history of early Christianity. Prerequisite: 108, 109, 208 or 209. FALL. [3] Levine (Divinity School).

Women's Studies 233. Women, Politics, and the Development of the Third World. (Also listed as Political Science 233) Analysis of the special problems afflicting women in the developing world and examination of proposed strategies, domestic and international, for reform. SPRING. [3] Hunter.

Women's Studies 235. Feminist Philosophy. (Also listed as Philosophy 235) Recent issues in feminist thought including the gender/sex distinction, sexuality, embodiment and feminist epistemology. SPRING. [3] Dobbs-Weinstein.

Women's Studies 239. Medieval Women in their Own Words. (Also listed as Comparative Literature 237 and Humanities 237) European writers from the late classical period through the Middle Ages. Autobiographies, hymns, fictions in poetry and prose with attention paid to ethnic and linguistic difference, cultural background, religious and philosophical ideas. Focus on political influence, personal relations, health and other life concerns, condition in society, and self-perception as writers. SPRING. [3] Barrett.

Women's Studies 240. Women's Health. How culture influences women's health, body image, self esteem. Issues include fertility control and child bearing, medical innovations to detect disease, alternative therapies, psychological well-being, sexuality, physical and sexual abuse. Impact of politics on health options for women. FALL. [3] Salisbury.

Women's Studies 242. Men, Women, and Society. Evaluation of the biological, psychological, and cultural theories explaining the social differences between men and women, with special attention to political inequality, division of labor, and the ambivalence in the male-female relationship. Examples from cross-cultural studies as well as from contemporary American society. [3] (Not currently offered)

Women's Studies 243. Images of Masculinity. Examines cultural beliefs, values, and representations of masculinities and male identity historically and in contemporary society through the lens of fiction, poetry, essays, film, and television. Investigates the social, political, and economic conditions that give rise to these constructions. Masculinity—past, present, future—is explored in relation to work, family, race, sexuality, and technological change. SPRING. [3] Staff.

Women's Studies 244. Feminist Approaches to Clinical Practice. The therapeutic process from a feminist perspective; power relationships; the impact of stereotypes, trauma, institutionalized sexism, social construction of gender on women's lives. [3] Manning. (Offered 2001/02)

Women's Studies 245. Psychology of Women. Feminist approaches to theory, research, and practice in psychology. Women at the center of analysis. Focus on their diversity.

Emphasis on inequities and the relationship between psychological understanding and social change. FALL. [3] Manning.

Women's Studies 246. Feminist Theory. (Also listed as English 246) An introduction to feminist theory. Topics include cross-cultural gender identities; the development of "masculinity" and "femininity"; racial, ethnic, class, and national differences; sexual orientations; the function of ideology; strategies of resistance; visual and textual representations; the nature of power. SPRING. [3] Dever.

Women's Studies 250. Gender in American Society. (Also listed as Sociology 250) Evolving gender stereotypes in American society, gender socialization throughout the life cycle, interpersonal relations, and contemporary social institutions. [3] Kilbourne.

Women's Studies 251. Women and Public Policy in America. (Also listed as Sociology 251) A study of public policies as they affect women in contemporary American society. Issues considered include participation of women in the labor force; effects of employment patterns on the family; birth control, abortion, and health care policies; child care; participation of women in political processes; divorce, child support, and custody; affirmative action policies; present governmental remedies and proposed alternatives. [3] Campbell.

Women's Studies 252. Human Sexuality. (Also listed as Psychology 252) The physiological, psychological, and cultural bases of sexual behavior. History of sexuality, gender roles, sex in human relationships, diagnosis and treatment of sexual disorders and dysfunctions, cross-cultural perspectives, pornography, rape, AIDS, and homosexuality. FALL. [3] L. Smith.

Women's Studies 253. Gender, Work, and Culture. (Also listed as Sociology 253) Examination of current patterns and labor market trends and their structural, cultural, and historical determinants, with special emphasis on U.S. society. Explores how ideas of appropriate behavior of women and men shape opportunity, constrain change, and affect the value of work. Topics include segregation and inequality, work and family, sexual harassment, affirmative action, economic restructuring and the global economy. [3] Steinberg. (Not currently offered)

Women's Studies 255. French Feminist Thought: Literary and Critical. (Also listed as French 255 and taught in French) Feminist themes in twentieth-century French literature and criticism. Authors include Beauvoir, Duras, Sarraute, Irigary, Cixous. [3] (Not currently offered)

Women's Studies 256. Race, Gender, and Sport. (Also listed as Sociology 256) Manifestations of race and gender in sport. Emphasis on race and gender ideologies and the associated inequalities in sport in America. International comparisons for context. FALL. [3] Dodo.

Women's Studies 257. Gender, Sexuality, and the Body. (Also listed as Sociology 257) Sociological analysis of the body as physical marker of gender and sexuality. Social meaning of biological reproduction and the body. Race, ethnicity, physical abilities, and class by variations in cultural ideals. FALL. [3] Steinberg.

Women's Studies 259. Reading and Writing Lives. Interdisciplinary exploration of life-stories as narratives. Strategies of (self-)representation and interpretation, with particular attention to women. Includes fiction, biography, autobiography, history, ethnography, and the writing of life-story narratives. FALL. [3] Sasson.

Women's Studies 260. Nineteenth-Century American Women Writers. Nineteenth-Century American Women Writers. (Also listed as American and Southern Studies 260 and English 260) Themes and forms of American women's prose and poetry, with the emphasis on alternative visions of the frontier, progress, class, race, and self-definition. Authors include Child, Kirkland, Fern, Jacobs, Harper, Dickinson, and Chopin. [3] Walker.

Women's Studies 261. Work and Family in American Life. (Also listed as Sociology 261) The changing relationship between work and family from the Colonial era to the present. Role of the U.S. corporation, specialization of the family, sex roles, social mobility. [3] Steinberg. (Not currently offered)

Women's Studies 266. Gender and Cultural Politics. (Also listed as Anthropology 266) Cross-cultural comparison of women's roles and status in western and non-Western societies. Role of myths, symbols, and rituals in the formation of gender identities and the politics of sexual cooperation, conflict, and inequality. Case studies from Africa, the Middle East, Europe North and South America, Asia, and Melanesia. [3] Conklin.

Women's Studies 267. Seminar on Gender and Violence. (Also listed as Sociology 267) In-depth study of violence against women, with a service-learning component in a community setting. Topics include domestic abuse, rape, sexual harassment, pornography, and global violence. Focus on problems and potential solutions, examining violence on a societal, institutional, and individual level, interrogating the "personal as political," and exposing power structures which shape our communities. FALL, SPRING. [3] Piepmeier.

Women's Studies 270. Lesbian Studies: Identity, Desire, and Representation. Theory, history, social, psychological, and cultural contexts of lesbians and their lives. Includes heterosexism, homophobia, health, race and class differences and the social construction of lesbian existence. SPRING. [3] Staff.

Women's Studies 271. Women at the Margins: German-Jewish Women Writers. (Also listed as German 271) Examination of themes, forms, and sociocultural issues shaping the work of German-Jewish women writers from the Enlightenment to the present. Readings and discussions in English. SPRING. [3] Werner.

Women's Studies 286. Women's Experience in America: from Colonial Times to 1880. (Also listed as History 286) Definitions of womanhood and "woman's place"; women's different experiences of work, marriage, and childbearing; religion, education, and community life. Native American and colonial definitions of gender; the impact of the American Revolution; the move west; slaves and slave owners, domesticity and public life; the antislavery and women's rights movements; women's citizenship and the Civil War. FALL. [3] Staff.

Women's Studies 287. Women's Experience in America: 1880 to Present. (Also listed as History 287) Women's different experiences of "modern" life and changing images of women. Industrialization, urbanization and immigration; wage work and housework; movements for social reform and woman suffrage; efforts to achieve equality in law, education, and politics; changes in the patterns of sexuality, courtship, and childbearing; and the emergence of modern feminism. SPRING. [3] Staff.

Women's Studies 289. Independent Study. A program of reading and research for advanced students in an area of Women's Studies arranged in consultation with an adviser. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed a total of 6] Staff.

Women's Studies 295. Selected Topics. Seminars or lecture courses devoted to topics in areas of competence of individual instructors, as announced in the *Schedule of Courses*. [3]

Recommended courses by subject area are as follows:

MUSIC: 200, Women and Music.

DANCE: 210, The Female Dancing Body.



BLAIR SCHOOL OF



Blair School of Music

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Music at Vanderbilt

BLAIR School of Music serves as the focal point at Vanderbilt for the study of music as a human endeavor and as a performing art. The school contributes to the quality of life at the University through concerts, lectures, and recitals by faculty, students, and visiting artists, scholars, and composers, and through course offerings in performance, music literature/history, composition, and theory. In an age of increasing technology and social complexity, music offers to persons of all ages a vital medium for the expression of the human spirit.

The Blair School has been an integral part of Nashville's musical environment since its founding in 1964 by the Justin and Valere Potter Foundation through a bequest of Valere Blair Potter. In 1981 the school was merged with Vanderbilt following the University's decision to develop an excellent program in music. Studies leading to the professional Bachelor of Music degree in performance were initiated in 1986.

Knowing the importance of a balanced education in music, Blair School subsequently expanded its Bachelor of Music degree program to include majors in composition/theory and musical arts. The major in composition/theory emphasizes analytical skills as well as the development of students' creativity. The major in musical arts is the school's most flexible program; it lays a solid foundation in the art of music, with equal preparation in the three basic disciplines of performance, theory, and music literature/history. The musical arts degree also forms the basis for a five-year program in teacher education offered cooperatively with Peabody College. Students in this curriculum can earn the B.Mus. degree in four years and the M.Ed. and teacher licensure for instrumental or vocal/general music in the fifth year (June–May).

A non-professional 32-hour liberal arts music major makes it possible for students outside the Blair School to choose music as a second major. Students in other schools and colleges of the University also may pursue a minor in music, music history, or music performance. And Blair offers a remarkable variety of electives for students who wish to enrich their studies with credit in music courses, ensembles, or performance instruction, or to select music as an extracurricular activity.

Blair School of Music is home to internationally known faculty soloists and ensembles, and Blair's performers, composers, and musicologists are among the most respected in their fields. Their dedication to teaching and a low student/faculty ratio provide students the personal attention that fosters maximum musical growth and understanding. The school is committed to its goal of developing students who are among the most articulate, culturally aware, and artistically sensitive of any graduates in the country.

The Faculty Ensembles

Blair String Quartet

Founded in 1967, the Blair String Quartet is the nucleus of the string department. Its members provide private instruction and coach chamber music ensembles and performance classes. The quartet performs throughout the United States.

Blair Woodwind Quintet

The Blair Woodwind Quintet forms the core of the wind department at Blair. Established in 1971, the ensemble concertizes regularly throughout the Southeast. Members of the quintet provide private instruction, coach chamber music ensembles, conduct woodwind seminars, and teach orchestral repertoire classes.

Blair Brass Quintet

The Blair Brass Quintet serves as a focal point for the brass faculty at the School. Its members provide private instruction, coach chamber ensembles, conduct brass seminars, and teach orchestral repertoire classes. Founded in 1995, it concertizes regularly.

Facilities

The present Blair building incorporates innovative developments in acoustical design and engineering. It contains teaching studios, classrooms, practice rooms, library, administrative offices, a MIDI piano lab, computer learning stations, and the 278-seat Blair Recital Hall—the focal point of the facility—where student recitals and concerts and master classes by faculty members and visiting artists are held on a regular basis. Building hours are 7 a.m. to 11 p.m. Office hours are 8 a.m. to 5 p.m.

In the fall of 2000, the size of the Blair building more than doubled when a new wing opened, adjoining the west side of the original facility and housing state-of-the-art classrooms, studios, piano labs, computer labs, piano technology lab, and practice rooms. In the fall of 2001, Blair's new 640-seat concert hall and rehearsal hall wing will open, adjoining the east side of the building and further enhancing the school's ability to host and produce orchestra, opera, and other major concert events.

The Anne Potter Wilson Music Library is a division of the Jean and Alexander Heard Library system. The collection, begun in 1947, was moved from Peabody College to its new and permanent home at Blair in the summer of 1985. It was named to honor Anne Potter Wilson by the Vanderbilt Board of Trust in 1987, and will expand dramatically when the east wing opens in the fall semester, 2001. The library houses over 35,000 books and musical scores, 17,500 recordings, many microforms, and subscriptions to 130 journals. It is equipped with exceptional listening facilities.

Offerings for the General University Student

Courses in music business (MUSO 100, 101), theory (MUSC 100, 105, 106, 107, 116, 118, 119, 120a–120b, 191, 216), a variety of offerings in music literature and history (MUSL 114, 115W, 140, 144, 145, 147, 148, 149, 150, 160, 170, 171, 183, 200, 218, 247, 264, 294, MUSO 103) and in the history of dance (DANC 110, 111, 112, 113, 114, 210) are designed particularly for the general student. Many courses fulfill humanities requirements for undergraduates in the School of Engineering and Peabody College; several fulfill social studies requirements in these schools. Six (MUSL 115W, 140, 141, 160, 183, 200) fulfill College Program in Liberal Education (CPLE) humanities requirements for students in the College of Arts and Science; one (MUSL 147) fulfills the American component and two (MUSL 170 and 171) the international component of the CPLE history and culture requirement. One (MUSL 115W) fulfills the CPLE writing requirement. Most courses designed primarily for music majors are also open to other students.

Performance instruction is available in both group and individual settings. Private instruction is offered in all orchestral instruments and in piano, organ, guitar, dulcimer, saxophone, euphonium, recorder, viola da gamba, fiddle, mandolin, and voice. Group instruction is offered in piano, voice, guitar, recorder, fiddle, mandolin, and percussion; groups have a maximum of six students. Fiddle is also offered in a class setting.

Ensembles sponsored by the school are open by audition to all members of the University community. Ensembles may be taken for academic credit or on a no-credit (NC) basis.

All undergraduates registered for instruction at Blair are admitted to the Blair Concert Series free of charge; a complimentary ticket must be obtained in advance, before noon of the performance day.

Music Minors

Students may elect one of three minors: music, music history, or music performance. A handbook for minors is available from the Blair receptionist. Students must plan their studies with Blair advisers Maureen Needham, Crystal Plohman, or Pamela Schneller. Ms. Plohman advises students with last names A–G, Dr. Needham advises students with last names H–M, and Ms. Schneller advises students with last names N–Z.

Music Minor. 24 hours.

Music Theory. *6 hours.*

MUSC 120a–120b; or 121–122 and 121e–122e

Music Literature/History. *12 hours.*

MUSL 140 or 141

Three courses chosen from MUSC 191, MUSL 115W, 144, 145, 147, 148, 149, 160, 170, 171, 183, 200, 218, 242, 243, 244, 247, 249, 264, and 294, including at least one 200-level course.

Performance. *4 hours.*

Individual performance instruction for at least four semesters.

Ensemble *2 hours (2 different semesters).*

Participation for two semesters in an appropriate performing ensemble, as assigned, following auditions by a faculty committee.

Music History Minor. 18 hours.

Music Theory. *6 hours.*

MUSC 120a–120b; or 121–122 and 121e–122e

Music Literature/History. *12 hours.*

MUSL 141,* 242, 243, and 244

*Students who have completed MUSL 140 must substitute another course for MUSL 141, selected from MUSL 144, 145, 147, 148, 160, 170, 171, 183, 200, 218, 247, 249 or 294.

Music Performance Minor. 26 hours.

Music Theory. *6 hours.*

MUSC 120a–120b; or 121–122 and 121e–122e

Music Literature/History. *6 hours.*

MUSL 140 or 141

One course chosen from MUSL 144, 145, 147, 148, 149, 160, 170, 171, 183, 200, 218, 242, 243, 244, 247, 249, 264, 294 and MUSC 191.

Performance. *12 hours.*

Individual instruction in a single performance medium for at least 6 semesters (any orchestral instrument, piano, organ, guitar, saxophone, euphonium, or voice.)

Students must meet minimum performance standards for admission to the program, with the required 12 hours at a level beyond that minimum. The Blair registrar can provide repertoire information and approval forms.

Ensemble. *2 hours (two different semesters).*

Participation in an appropriate performing ensemble, as assigned, following auditions by a faculty committee.

Music as a Second Major

Blair offers a non-professional liberal arts major in music that requires a minimum of 32 hours. Designed jointly by Blair and the College of Arts and Science, it is also available to Peabody and Engineering students as a second major. Arts and Science students earn a second major in music under the B.S. degree. Students must plan their studies with Blair adviser Professor Carl Smith, coordinator of the program. A handbook for students is available from the Blair receptionist. Minimum requirements are as follows:

Music Major (Second Major). 32 hours.

Music Theory. *12 hours.*

MUSC 121, 121e, 122, 122e, 220, 221, taken in sequence.

Placement out of 121 would allow the inclusion of other theory courses to fulfill the 12-hour requirement.

Music Literature/History. *12 hours.*

MUSL 141, 242, 243, 244, with MUSL 141 prerequisite to the other courses.

Placement out of 141 would allow the inclusion of other literature/history courses to fulfill the 12-hour requirement.

Individual Performance Instruction. *4 hours.*

Four semesters of study in any orchestral instrument, piano, organ, guitar, saxophone, euphonium, or voice.

Students must meet minimum performance standards for admission to the program, with the required 4 hours at a level beyond that minimum. Representative repertoire lists reflecting minimum performance standards and required approval forms are available from the Blair registrar or Professor Carl Smith, coordinator of the program.

Ensemble. *2 hours (two different semesters).*

Participation in an appropriate performing ensemble, as assigned, following auditions by a faculty committee.

Elective. *2–3 hours.*

One course in music theory, literature/history, or conducting, chosen from MUSC 191, 222, 223, 224; MUSL 144, 145, 147, 148, 149, 160, 170, 171, 183, 200, 218, 247, 249, 264, 294; MUSO 261.



The Degree Program

BACHELOR of Music degree programs include four different majors: performance, composition/theory, musical arts, and the musical arts/teacher education track. The performance major is available in any orchestral instrument, piano, organ, classic guitar, saxophone, euphonium, multiple woodwinds, and voice. The composition/theory major emphasizes both the creation and analysis of music. The musical arts major provides a solid foundation in the art of music and includes equal preparation in the three basic disciplines—theory, literature/history, and performance. Students, excepting musical arts/teacher education majors, may complete an optional concentration in collaborative arts, composition, literature/history, pedagogy, or theory. A limited number of students may participate in the musical arts/teacher education program, a five-year curriculum jointly developed with Peabody College, for students interested in earning the Master of Education degree and teacher licensure in addition to the B.Mus. degree.

Liberal arts core requirements include English, the humanities, courses chosen from history or social science, mathematics or natural science, and academic electives. The degree total is 126 credit hours.

Music Core

All Bachelor of Music degree candidates complete a standard core of requirements designed to ensure an intense, yet broadly-based, understanding of the discipline of music. The core consists of 39 hours, plus performance instruction.

MUSIC THEORY AND KEYBOARD HARMONY. 20 hours

MUSC 121, 121e, 122, 122e, 123e, 124e; 131a-131b and 132a-132b (or 133a-133b); 220, 221, 222

MUSIC LITERATURE/HISTORY. 9 hours*

MUSL 242, 243, 244

CONDUCTING. 2 hours

MUSO 261

ENSEMBLE. 8 hours *minimum* (every semester in residence)

Specific ensemble requirements vary with performance area and are listed below.

Auditions for major ensembles (orchestra, wind ensemble, symphonic choir) are required each semester. Assignment to ensembles is at the discretion of the directors.

*Students must also take MUSL 141, listed under Humanities in the Liberal Arts Core.

INDIVIDUAL PERFORMANCE INSTRUCTION

32 hours (instrumental performance majors)

28 hours (vocal performance majors)

16 hours (musical arts majors)

6 hours (composition/theory majors)

Performance class every semester in residence for performance and musical arts majors (flute, oboe, clarinet, bassoon, all brass, all strings, piano, guitar, voice).

RECITAL ATTENDANCE *No credit*

MUSO 108 (every semester in residence except final semester)

Specific requirements are outlined in the Academic Regulations section of the catalog.

Major Area, Minor Area, and Concentration Requirements

Each area has specific ensemble requirements and requires coursework in addition to the core, varying from 2 to 38 hours, as follows:

BRASS PERFORMANCE. *5 hours*

Ensemble: MUSE 101b or 101e (six semesters), 201L (one semester), and 201c or 201L (one semester). Students may substitute MUSE 206 for 101b or 101e, if assigned.

Note: Horn students may substitute 201w for 201L and 208 for 101b or 101e, if assigned.

Performance: MUSO 110a or 110b (every semester); MUSR 295, 299

Other Music: MUSO 152, 252

COMPOSITION/THEORY. *38 hours*

Composition/Theory: MUSC 225, 229, 230, 231a–231b, 232a–232d, 299

Ensemble: eight semesters selected with the adviser's approval

Music Electives: 3 hours

Total hours in music: 80 minimum

Liberal Arts: must include one year of French, German, or Italian and 200-level courses in English, fine arts, and philosophy; a total of 36 hours, rather than 30, in liberal arts.

CONCENTRATION IN COLLABORATIVE ARTS. *15–21 hours*

Literature/History: 247

Performance: MUSP 193 [1 hour], MUSR 299 (1 hour), MUSO 109d every semester

Other Music: MUSO 159, 159c, 159d, 256, 259, 289 (2 hours in vocal coaching or chamber music literature)

Ensemble: MUSE 101a (two semesters), 101f (as apprentice pianist), 201c, 201d, 201e, 201f (vocal), choice of 201e or 201f, and four semesters chosen from 201c, 201d, 201e, 201f

Liberal Arts: must include 5 hours each in two different languages chosen from Italian, German, or French. Students with previous study in one of these must study the other two

Recommended: MUSC 224 and MUSL 218.

Deadline to declare concentration: December 1 of junior year.

CONCENTRATION IN COMPOSITION. *19 hours*

Composition/Theory: MUSC 230 and 16 hours in 230e

Deadline to declare concentration: December 1 of junior year.

CONCENTRATION IN MUSIC LITERATURE/HISTORY. *25 hours*

Literature/History: 9 elective hours (in addition to those required for the musical arts major)

Liberal Arts: German 101–102, History 100, 101 (formerly 101a–101b); a total of 37 hours, rather than 30, in liberal arts)

Deadline to declare concentration: December 1 of junior year.

CONCENTRATION IN PEDAGOGY. 16 hours

Other Music: MUSO 161 and either 256, 257, 258, 259, *or* 289 (in field, 2 hours), and either 266, 267, 268, 269 *or* 289 (in field, 2 hours), and 271 (2 hours)

Internship: MUSO 281 (6 hours)

Senior Recital: MUSR 299

Liberal Arts: must include Psy 1630 and 2310 (Peabody courses)

Deadline to declare concentration: December 1 of junior year.

CONCENTRATION IN THEORY. 19 hours

Composition/Theory: MUSC 230 and 16 hours in 227

Deadline to declare concentration: December 1 of junior year.

GUITAR PERFORMANCE. 6 hours

Ensemble: MUSE 101a (four semesters), 204 (one semester), and 201c *or* 204 (three semesters)

Performance: MUSO 109e (every semester), 295, 299

Other Music: MUSO 258, 268

HARP PERFORMANCE. 3 hours

Ensemble: MUSE 101b (six semesters), 201c (two semesters)

Performance: MUSO 295, 299

Other Music: MUSO 254a

KEYBOARD PERFORMANCE. 6 hours

Ensemble: MUSE 101a (two semesters), 201c *or* 201e (one semester), 201f (one semester), 201c, 201e, *or* 201f (two semesters), and ensemble of choice (two semesters)

Performance: MUSO 109d (every semester), 295, 299

Other Music: MUSO 256 *or* 257; 266 *or* 267 (in field)

MINOR INSTRUMENT. 10 hours

Ensemble: participation on minor instrument for two semesters in an appropriate ensemble, as assigned (2 hours)

Performance: four semesters in a second performance area (any orchestral instrument, piano, organ, harpsichord, guitar, saxophone, euphonium, *or* voice) at a level of proficiency represented by L-level registration. Representative repertoire lists reflecting minimum performance standards and required approval forms are available from the Blair registrar. Consent of instructor required (8 hours)

Deadline to declare minor instrument: December 1 of junior year.

MULTIPLE WOODWINDS PERFORMANCE. 2–3 hours

Ensemble: MUSE 101b *or* 101e (six semesters), 201c, 201W, *or* 207 (two semesters).

Must include at least one semester in ensemble on secondary instrument. Students may substitute MUSE 208 for 101b *or* 101e, if assigned.

Performance: MUSR 299. Must include performance on three woodwind instruments.

Individual instruction requirements, Plans A and B, are outlined in *Beginning at Blair*, the school's handbook for freshmen

Other Music: MUSO 151; 251 strongly recommended

MUSICAL ARTS. 22 hours

Composition/Theory: MUSC 223, 224, or 225 or 230 (2-3 hours)

Ensemble:

Winds, strings, harp—four semesters orchestra or wind ensemble and four semesters ensemble of choice.

Percussion—four semesters orchestra or wind ensemble, two semesters Symphonic Choir and two semesters ensemble of choice

Keyboard—two semesters Symphonic Choir and six semesters ensemble of choice

Guitar—four semesters Symphonic Choir and four semesters ensemble of choice.

Voice—eight semesters Symphonic Choir

Literature/History: 9 hours chosen from MUSL 114, 115W*, 144, 145, 147, 148, 149, 150, 160, 170, 171, 183, 200, 218, 247, 249, 264, 289, 294, 298, 299a, 299b or MUSO 103

Performance: performance class every semester if offered (MUSO 109a, 109b, 109c, 109d, 109e, 109f, 109g, 109L, 110a, 110b, 110d, 110e, 110f)

Music Electives: 10–11 hours

Total hours in music: *80 minimum*

MUSICAL ARTS/TEACHER EDUCATION, INSTRUMENTAL. 38 hours

Composition/Theory: MUSC 224, 230

Ensemble: 6 semesters large ensemble (MUSE 101b, 101e, 101a) and 2 semesters small ensemble. Instrumentalists must have experience in orchestra, wind ensemble, jazz ensemble (as appropriate), and chamber music. Wind instrumentalists must participate a minimum of 2 semesters in marching band and be involved in writing the annual student show. All students must have ensemble experience on their secondary instrument.

Literature/History: MUSL 147, 160, and either 183 or 200

Performance: Performance class every semester if offered. Secondary instrument four semesters. Intro to Voice MUSP 103a. Senior Recital MUSR 299.

Other Music: Instrumental Conducting MUSO 262.

Teaching: Class Instruments MUST 101, 102, 103, 104. Practica in Music Teaching MUST 250a, 250b, 250c, 250d. EDUC 1020, 2040, 2120

MUSICAL ARTS/TEACHER EDUCATION, VOCAL/GENERAL. 36 hours

Composition/Theory: MUSC 224, 230

Ensemble: 6 semesters large ensemble (MUSE 101a, 101b, 101e) and 2 semesters small ensemble. Pianists, vocalists, and guitarists must have experience accompanying. All students must have ensemble experience on their secondary instrument.

Literature/History: MUSL 147, 160, and either 183 or 200

Performance: performance class every semester if offered. Secondary instrument 4 semesters (voice for pianists and organists, piano for singers, voice or piano for guitarists or other instrumentalists). Intro to Voice MUSP 103a (singers substitute Diction: English and Italian MUSO 159). Intro to Guitar, MUSP 104a (guitar majors exempt). Senior Recital MUSR 299

Other Music: Choral Conducting MUSO 263

Teaching: Intro to Classroom Instruments MUST 105; Practica in Music Teaching MUST 250a, 250b, 250c, 250d. EDUC 1020, 2040, 2120.

PERCUSSION PERFORMANCE. 6 hours

Ensemble: MUSE 101b or 101e (four semesters); 101a (two semesters); and 201c or 210 (four semesters)

Performance: MUSR 295, 299

Other Music: MUSO 153, 253a

* All courses numbered 115 or 115W are freshman seminars with limited enrollment.

STRING PERFORMANCE. 5–6 hours

Ensemble: MUSE 101b (eight semesters); 201g (one semester, except double bass majors); 201c or 201g (two semesters)

Performance: MUSO 109b and 111c or 111d (violin majors, every semester); 109g (viola majors, every semester); 109c (cello majors, every semester); 109L (bass majors, every semester); MUSR 295, 299

Other Music: MUSO 254a

VOCAL PERFORMANCE. 11 hours

Ensemble: MUSE 101a (eight semesters)

Performance: MUSP 186 (two semesters) or 102a and 186 (one semester); MUSO 109f (every semester), MUSR 295, 299

Other Music: MUSO 159, 159c–159d, 259, 269

WOODWIND PERFORMANCE. 4 hours

Ensemble: MUSE 101b or 101e (six semesters); MUSE 201c (two semesters). Students may substitute MUSE 208 for 101b or 101e, if assigned.

Performance: MUSO 109a (flute majors, every semester); 110d (oboe majors, every semester); 110e (bassoon majors, every semester); 110f (clarinet majors, every semester); MUSR 295, 299

Other Music: MUSO 151, 251

B

Liberal Arts Core

The liberal arts requirements are intended to ensure proficiency in the use of the English language and a broadly based liberal arts background. The curriculum, which provides maximum flexibility for each student, requires a minimum of 30 hours for performance or musical arts majors, 36 hours for composition/theory majors. Students electing a second major outside of music complete only the Blair liberal arts core; they are not expected to fulfill the core requirements (such as CPLE) of another Vanderbilt school or college. Hours earned toward the Blair liberal arts core may also be counted toward a second major or minor, if appropriate. Students admitted with a deficiency relative to high school credits must plan their liberal arts work to overcome the deficiency.

English/Writing (6 hours)

Students must complete one W course during the freshman year. Two W courses chosen from the English electives may also satisfy humanities requirements. A score of 4 or 5 on the College Board English Advanced Placement Examination earns 6 hours credit, fulfilling the English/Writing requirement. A score of 760 or more on the SAT II Writing Test fulfills the English/Writing requirement, but does not earn credit.

For composition/theory majors, a 200-level English course is required regardless of SAT scores.

For musical arts/teacher education majors, a fine arts or philosophy W course is required.

COMPOSITION. English 100W.

A score of 560 or more on the SAT II Writing Test exempts English 100W, allowing other courses to fulfill the 6-hour requirement.

Electives from the following:

- English 104W, 105W, 106W, 109W, 112W, 115W*, 118W, 120W, 208a, 208b
- Communication Studies 100, 101
- Dance History 112, 113 (Blair courses)
- Music literature/history 115W* (freshman seminar in Music and Modernism or Shakespeare and Music)
- Writing courses in any discipline, designated by W in the course number

Humanities (9 hours)

MUSL 141. Students should complete this required course during the freshman year.

For composition/theory majors, 16 hours, including one year of French, German, or Italian, a 200-level course in fine arts, and a 200-level course in philosophy.

For teacher education track students, requirements are fulfilled by fine arts or philosophy W course, MUSL 160, 183, or 200.

For vocal performance majors, 10 hours, chosen from French, German, and Italian.

Electives from the following:

- African American Studies 114, 145, 263, 276
- American Studies 205, 210, 212, 218, 225, 260, 268a, 277
- Anthropology 130, 226, 255, 256
- Arabic: all courses
- Catalan: all courses
- Chinese: all courses
- Classics 115, 115W,* 130, 146, 150, 160, 175, 203, 204, 205, 206, 210, 217
- Communication Studies 201, 222
- Comparative Literature 105W, 106W, 107W, 108W, 140, 141, 150, 151, 156, 175, 202, 203, 215, 224, 225, 237, 239, 240
- Dance history 110, 111, 112, 113, 114, 210 (Blair courses)
- English 104W, 105W, 106W, 109W, 112W, 208a–208b, 209a–209b, 210, 211, 212, 215, 260, 263, 265, 268a–268b, 272a–272b, 276, 277
- European Studies 225
- Fine Arts 110, 111, 115,* 115W,* 130, 200, 203, 204, 205, 206, 210, 211, 212, 214, 215, 234, 240, 241, 242
- French: all courses
- German: all courses (no knowledge of German language required for 171, 172, 237, 245, 246, 270)
- Greek: all courses
- Hebrew: all courses
- Humanities 105W, 106W, 107W, 108W, 115, 115W,* 140, 141, 150, 151, 156, 175, 202, 203, 215, 224, 225, 237, 239, 240
- Italian: all courses (no knowledge of Italian language required for 224)
- Japanese: all courses
- Latin: all courses
 - Latin American Studies 234
- Music literature/history 115W, 160, 183, 200, and MUSO 103
- Philosophy 100, 100W, 102, 105, 115,* 115W,* 120, 210, 211, 212, 213, 222, 224, 228, 240, 241, 242, 243
- Portuguese: all courses (no knowledge of Portuguese lrequired for 293 or 295)
- Religious Studies: all courses

Russian: all courses (no knowledge of Russian required for 221 or 222)

Spanish: all courses

Theatre 100, 115, * 115W,* 201, 202, 203, 204, 232, 271, 280, and MUSO 103

Women's Studies 125, 150, 230, 231, 232, 239, 260, 271; Dance History 210

History, Social Science (3 hours)

For teacher education track students, 6 hours, including one course chosen from HIST 170, 171, 173, 268, 269, 270, 272, 273, 274, 275, 279, or 280, and an "international" social science course, the study of a culture other than your own (see recommended courses under "International" listings below).

HISTORY.

American Studies 115,* 115W*

Communication Studies 220, 221

European Studies 201, 231, 260

History: all courses

Latin American Studies 201

Music Literature/History 147, 170, 171

SOCIAL SCIENCE.

African-American Studies 101, 235, 253

American Studies 104, 204, 220, 221, 223, 235, 247, 253, 268b, 278, 281

Anthropology: all courses

Communication Studies 210, 220, 221, 240, 241

Dance History 210

East Asian Studies 240, 278

Economics 100, 101, 115,* 115W

Human and Organizational Development (Peabody) 1000, 1100, 1200, 1700, 2240

Interdisciplinary Studies 201

Linguistics 200, 201, 202, 203, 204

Music MUSO 161

Political Science: all courses

Psychology: all courses

Psychology (Peabody) 1200, 1300, 1500, 1600, 1630, 1700, 2230, 2310; 2320; SPED 1010; ED 1020

Russian 171, 172, 238 (no knowledge of Russian language required)

Sociology: all courses

Social Science 230, 232, 235

Women's Studies 104, 204, 224, 233, 238, 239, 242, 245, 246, 250, 251, 253, 257, 270, 286, 287

INTERNATIONAL SOCIAL SCIENCE.

Anthropology 101, 103, 104, 206, 265

Economics 267, 287

History: any non-American, non-European course

Political Science 102, 210, 211, 212, 214, 215, 216, 217, 219, 221, 222, 225, 227, 228

Sociology 101, 102, 201, 202, 220, 230, 231, 233, 242, 248, 255, 261, 265, 277

Mathematics, Natural Science (3 hours)

Students who score below 520 on the SAT I, Quantitative, or below 20 on ACT Math Sub-test, must take MATH 127a or 133.

For teacher education track students, 7 hours, including MATH 127a or Psychology 2101 (Peabody) and either biology, chemistry, or physics.

* All courses numbered 115 or 115W are freshman seminars with limited enrollment.

MATHEMATICS.

Mathematics: all courses

Psychology (Peabody) 2101

NATURAL SCIENCE.

Astronomy: all courses

Biological Sciences: all courses

Biology: all courses

Chemistry: all courses

Geology: all courses

History 201, 202, 204, 206

Molecular Biology: all courses

Neuroscience 201, 255

Physics: all courses

Psychology 201

Religious Studies 102, 202

Science, Technology, and Humanities 203

Academic Electives (9 hours)

For voice majors, 5 hours.

For composition/theory majors, 8 hours

For musical arts/teacher education majors, 9 hours, specifically Psychology (Peabody) 1630 and 2310 and SPED 1010.

May include any course listed in the Liberal Arts Core, all courses in the non-music disciplines listed in the Liberal Arts Core (excluding art studio and theatre tech), or courses in African-American studies, business administration, computer music, computer science, engineering science, language, Latin American studies, and in the Peabody College areas of human and organizational development or psychology and human development

Free Electives (sufficient to complete 126 hours)

Any course in any Vanderbilt school.

Sample Curriculum Plans

Performance Major

Programs vary with departments, since specific requirements differ. Curriculum plans for each performance area are provided in *Beginning at Blair*, the school's handbook for new students.

		Semester hours	
		FALL	SPRING
FRESHMAN YEAR			
MUSC 121, 122	Music Theory I and II	2	2
MUSC 121e, 122e	Ear Training and Sightsinging I and II	1	1
MUSC 131a–131b	Keyboard Harmony I and II	1	1
MUSE 101	Ensemble	1	1
MUSO 108	Recital Attendance	0	0
MUSO 109	Performance Class	0	0
MUSL 141	Survey of Music Literature	3	–
MUSL 242	Music of the Middle Ages and Renaissance	–	3
MUSR	Performance Instruction	4	4
	English/writing	3	3
		15	15
SOPHOMORE YEAR			
MUSC 123e, 124e	Ear Training and Sightsinging III and IV	1	1
MUSC 132a–132b	Keyboard Harmony III and IV	1	1
MUSC 220, 221	Music Theory III and IV	3	3
MUSE 101	Ensemble	1	1
MUSL 243	Music of the Baroque and Classic Eras	3	–
MUSL 244	Music of the Romantic and Modern Eras	–	3
MUSO 108	Recital Attendance	0	0
MUSO 109	Performance Class	0	0
MUSR	Performance Instruction	4	4
	Liberal Arts	3	3
		16	16
JUNIOR YEAR			
MUSE 101	Ensemble	1	1
MUSE 201	Chamber Music	1	2
MUSO 108	Recital Attendance	0	0
MUSO 109	Performance Class	0	0
MUSO	Orchestral Repertoire/Instrument Literature	1	1
MUSO 261	Conducting	2	–
MUSR	Performance Instruction	4	4
MUSR 295	Junior Recital	–	1
	Liberal Arts	6	6
	Free Electives	1	1
		16	16
SENIOR YEAR			
MUSE 101	Ensemble	1	1
MUSE 201	Chamber Music	–	1
MUSO 108	Recital Attendance	0	0
MUSO 109	Performance Class	0	0
MUSR	Performance Instruction	4	4
MUSR 299	Senior Recital	–	1
	Liberal Arts	3	–
	Free Electives	8	9
		16	16
	Total hours:	126	126

Composition/Theory Major

		Semester hours	
		FALL	SPRING
FRESHMAN YEAR			
MUSC 121, 122	Music Theory I and II	2	2
MUSC 121e, 122e	Ear Training and Sightsinging I and II	1	1
MUSC 131a–131b	Keyboard Harmony I and II	1	1
MUSC 230	Introduction to Composition	–	3
MUSE	Ensemble	1	1
MUSL 141	Survey of Music Literature	3	–
MUSL 242	Music of the Middle Ages and Renaissance	–	3
MUSO 108	Recital Attendance	0	0
MUSP	Performance Instruction	1	1
	English/writing	3	–
	Liberal Arts	3	3
		15	15
SOPHOMORE YEAR			
MUSC 123e, 124e	Ear Training and Sightsinging III and IV	1	1
MUSC 220, 221	Music Theory III and IV	3	3
MUSC 132a–132b	Keyboard Harmony III and IV	1	1
MUSC 231a–231b	Composition	3	3
MUSE	Ensemble	1	1
MUSL 243	Music of the Baroque and Classic Eras	3	–
MUSL 244	Music of the Romantic and Modern Eras	–	3
MUSO 108	Recital Attendance	0	0
MUSP	Performance Instruction	1	1
	English/writing	3	–
	Liberal Arts	–	3
		16	16
JUNIOR YEAR			
MUSC 222	Music Theory V	2	–
MUSC 225	Seminar in Advanced Analysis	–	2
MUSC 232a–232b	Advanced Composition	4	4
MUSE	Ensemble	1	1
MUSO 108	Recital Attendance	0	0
MUSO 261	Conducting	2	–
	Music Electives	–	3
	Liberal Arts	6	2
	Free Electives	1	4
		16	16
SENIOR YEAR			
MUSC 229	Senior Thesis	1	–
MUSC 232c–232d	Advanced Composition	4	4
MUSC 299	Senior Composition Recital	–	1
MUSE	Ensemble	1	1
MUSO 108	Recital Attendance	0	0
MUSP	Performance Instruction	1	1
	Foreign Language	5	5
	Free Electives	4	4
		16	16
	Total Hours:	126	126

Musical Arts Major

Optional concentrations in composition, literature/history, pedagogy, and theory will affect the outline. Curriculum plans with each of these added to the basic musical arts requirements are provided in *Beginning at Blair*, the school's handbook for new students.

		Semester Hours	
		FALL	SPRING
FRESHMAN YEAR			
MUSC 121, 122	Music Theory I and II	2	2
MUSC 121e, 122e	Ear Training and Sightsinging I and II	1	1
MUSC 131a–131b	Keyboard Harmony I and II	1	1
MUSE	Ensemble	1	1
MUSL 141	Survey of Music Literature	3	–
MUSL 242	Music of the Middle Ages and Renaissance	–	3
MUSO 108	Recital Attendance	0	0
MUSO 109	Performance Class	0	0
MUSP 1–L	Performance Instruction	2	2
	English/writing	3	3
	Liberal Arts	3	3
		16	16
SOPHOMORE YEAR			
MUSC 123e, 124e	Ear Training and Sightsinging III and IV	1	1
MUSC 132a–132b	Keyboard Harmony III and IV	1	1
MUSC 220, 221	Music Theory III and IV	3	3
MUSE	Ensemble	1	1
MUSL 243	Music of the Baroque and Classic Eras	3	–
MUSL 244	Music of the Romantic and Modern Eras	–	3
MUSO 108	Recital Attendance	0	0
MUSO 109	Performance Class	0	0
MUSP 1–L	Performance Instruction	2	2
	Liberal Arts	6	6
		17	17
JUNIOR YEAR			
MUSC 222	Music Theory V	2	–
MUSC	Composition or Advanced Theory Elective	–	2
MUSE	Ensemble	1	1
MUSL	Music Literature/History Electives	3	3
MUSO 108	Recital Attendance	0	0
MUSO 109	Performance Class	0	0
MUSO 261	Conducting	2	–
MUSP 2–L	Performance Instruction	2	2
	Music Electives	2	2
	Liberal Arts	3	–
	Free Electives	–	5
		15	15

SENIOR YEAR		Semester Hours	
		FALL	SPRING
MUSE	Ensemble	1	1
MUSL	Music Literature/History Elective	3	–
MUSO 108	Recital Attendance	0	0
MUSO 109	Performance Class	0	0
MUSP 2–L	Performance Instruction	2	2
	Music Electives	3	4
	Free Electives	6	8
		15	15
	Total hours:		126

Musical Arts/Teacher Education Major (5 year M.Ed.) *

FRESHMAN YEAR

MUSC 121,122	Music Theory I and II	2	2
MUSC 121e, 122e	Ear Training and Sightsinging I and II	1	1
MUSC 131a, 131b	Keyboard Harmony I and II	1	1
MUSE	Ensemble	1	1
MUSL 141	Survey of Music Literature	–	3
MUSO 108	Recitals	0	0
MUSO 109	Performance Class	0	0
MUSP 103a	Introduction to Voice I (excluding voice majors)	–	1
MUSP 1–L	Performance Instruction	2	2
	Liberal Arts [English and Math; Intro to Exceptionality]	3+3	3
EDUC 1020	Society, School & Teacher	3	–
MUST 250a	Practicum	–	1
		16	14–15

* Programs vary somewhat for instrumental or vocal/general track. Curriculum plans for each track are provided in *Beginning at Blair*, the school's handbook for new students.

SOPHOMORE YEAR

MUSC 123e, 124e	Ear Training and Sightsinging III and IV	1	1
MUSC 132a, 132b	Keyboard Harmony III and IV	1	1
MUSC 220, 221	Music Theory III and IV	3	3
MUSE	Ensemble	1	1
MUSL 242	Music of the Middle Ages and Renaissance	3	–
MUSL 243	Music of the Baroque and Classic Eras	–	3
MUSO 108	Recitals	0	0
MUSO 109	Performance Class	0	0
MUSO 159	Diction for Singers (voice majors only)	1	0
MUSP 1–L	Performance Instruction	2	2
	Intro to Guitar; Classroom Instruments	1	1
	Liberal Arts [Psych 1630; Ed. Psych 2310]	3	3
MUST 250b	Practicum II	–	1
		15–16	16

		Semester Hours	
		FALL	SPRING
JUNIOR YEAR			
MUSC 222	Music Theory V	2	-
MUSC 224	Orchestration	3	-
MUSC 230	Introduction to Composition	-	3
MUSE	Ensemble	1	1
MUSL 244	Music of the Romantic and Modern Eras	3	-
MUSL	Music Literature/History Elective**	-	3
MUSO 108	Recitals	0	0
MUSO 109	Performance Class	0	0
MUSO 261, 262	Conducting; Choral or Instrumental Conducting	2	2
MUSP 2--L	Performance Instruction	2	2
	Secondary Instrument	1	1
	Philosophy W or Fine Arts W (writing course)	-	3
	Free Electives	2	-
MUST 250c	Practicum III	-	1
		16	16
SENIOR YEAR			
MUSE	Ensemble	1	1
MUSL	Music Literature/History Elective**	3	3
MUSO 108	Recitals	0	0
MUSO 109	Performance Class	0	0
MUSP 2--L	Individual Performance Instruction	2	2
MUSR 299	Senior Recital	1	-
EDUC 2040, 2120	Introduction to Classroom Technologies; and Parents and Their Developing Children	1 + 3	-
	Secondary Instrument	1	1
	Liberal Arts [International Social Science, U.S. History, and Science]	3	3 + 4
	Class Instruments or free elective	1	1
MUST 250d	Practicum IV	-	1
		16	16
	Total Hours:		126

** Music literature/history electives: MUSL 147, 160, and either 183 or 200 (American Music; World Music; and choice of Music, the Arts, and Ideas; or Women and Music).

Note: Ensemble experience must include both large and small ensembles and varies according to specific track (i.e., vocal/general or instrumental). Ensemble experience on the secondary instrument is required.

Teacher Education

The Blair School and Peabody College offer a program for students interested in teacher licensure. Students completing this program earn the Bachelor of Music (B.Mus.) degree, majoring in musical arts/teacher education track for four years, and the Master of Education (M.Ed.) degree to complete professional education requirements. During the senior year, application is made to Peabody College. The M.Ed. work requires one calendar year, June–May. Students may elect to work toward licensure in either instrumen-

tal or vocal/general music. The curriculum includes a strong music performance emphasis; a solid foundation in music literature, theory, and the liberal arts; undergraduate and graduate courses in psychology and education; and practica (practical experience) every year, with two student teaching opportunities in the spring semester of the master's degree work. Practica constitute a wide variety of experiences, including public school, private school, and Blair's pre-collegiate programs such as Suzuki strings, Children's Chorus program, and the Youth Orchestra program. Students complete the same music core requirements as any other B.Mus. candidate. The liberal arts core is adapted to fulfill state licensure requirements. The music electives ordinarily associated with the musical arts curriculum are, for students in the five-year program, devoted to prerequisites for the M.Ed. degree and for the teaching license; thus, there are very few free elective hours in the curriculum.

Sophomore Review

All students admitted to this program at matriculation must be formally continued through a process called Sophomore Review. Criteria for this review are listed below. Students not approved can complete the general musical arts degree.

Specific Criteria

1. An interview of the candidate by the student's faculty adviser and an in-service classroom music teacher.
2. Passing scores on the Pre-Professional Skills Test or a minimum score of 1020 on the SAT or 22 on the ACT.
3. A minimum cumulative grade point average of 2.500.
4. Successful completion (C- or better) of at least two of the required professional education courses.
5. A minimum grade of C- in all professional education courses; and
6. A minimum grade of C- in two of the following: English 100W, 104W, 105W, 106W, 112W, 120W, MUSL 141.

General Criteria

These criteria rest on the professional judgment of appropriate faculty members, who are polled at the time of the student's application for Sophomore Review.

1. Endorsement by the appropriate faculty that the applicant has demonstrated the academic and musical qualifications expected of Vanderbilt teacher education candidates.
2. Endorsement by the appropriate faculty that the applicant has demonstrated the personal and character traits expected of Vanderbilt teacher education candidates.

Procedure for Sophomore Review

Students apply for continuation in the teacher education program (Sophomore Review) through the coordinator of the program.

Applications must be submitted in either the fall or spring semester of the sophomore year. Deadlines for submitting applications for Sophomore Review are 1 October and 1 February.

Admission to the Master's Degree

During the senior year, students with strong records are counseled to take the Graduate Record Examination (GRE) or the Miller Analogies Test (MAT) and apply for admission to Peabody College for the Master of Education degree program. The admissions process includes consideration of GPA, test scores, and recommendations. Deadline for receipt of all application materials is 1 March.

Admission to Student Teaching

Prospective student teachers must apply for admission to student teaching during the fall semester of the fifth year. Application materials are available from the Peabody Office of Teacher Licensure. Deadline for submitting applications is 1 October. Student teaching requires at least two placements at two different age levels in a fifteen-week semester.

B

General Criteria for Admission to Student Teaching

1. Completion of the B.Mus. degree.
2. Admission to the Master of Education program.
3. Successful completion (C- or above) of all courses prerequisite to student teaching;
4. A minimum grade point average of 3.00 (usually in the last 60 hours of coursework).
5. Satisfactory performance in course work in areas in which teacher licensure is sought.
6. Submission of a résumé and personal statement, discussing why the applicant wants to teach and what strengths the applicant brings to the classroom.
7. Endorsement by the appropriate faculty regarding academic, musical, and personal readiness to teach, including dependability, professional and ethical behavior, attitude, and interpersonal skills.

Application for Teacher Licensure and University Recommendation for Licensure

All students completing the teacher education program at Vanderbilt are strongly advised to apply for a license in Tennessee whether or not they plan to teach in this state. Normally a Tennessee license is accepted in all other states and foreign countries in which Vanderbilt students apply to teach. The student is responsible for applying for licensure through the Office of Teacher Licensure located in 301 Wyatt Center for Education (formerly Social-Religious Building). Each state has its own set of application forms and procedures for licensure;

information is available in the Office of Teacher Licensure.

To be licensed through Vanderbilt's teacher education program, a graduate must earn a positive licensure recommendation from the University. The University's decision to recommend a candidate is based upon the following:

1. Maintaining a 3.0 grade point average in the fifth year.
2. Achieving the state minimum score on all required parts of the PRAXIS Examinations. A copy of the scores must be sent to the Vanderbilt Office of Teacher Licensure (code R 1871).
3. Receiving a positive recommendation from the student's department as a result of the student teaching experience (Pass in student teaching does not guarantee a favorable recommendation).

All Vanderbilt teacher education programs are approved by the National Council for Accreditation of Teacher Education (NCATE). The program for licensure to teach instrumental or vocal/general music is approved by the National Association of Schools of Music (NASM).



Special Programs

BLAIR School of Music offers individual, group, class, and ensemble instruction to pre-college and adult students (defined as students above high school age not receiving university credit). A catalog describing these programs is available at the school.

The Adult Program

Blair offers to adults individual instruction in orchestral instruments and in piano, organ, guitar, harp, saxophone, euphonium, recorder, viola da gamba, harpsichord, fiddle, dulcimer, mandolin, voice, and composition. Group instruction is available in piano, guitar, recorder, percussion, viola da gamba, fiddle, mandolin, and voice.

Classes are offered in basic musicianship, music theory and ear training, music literature and history (twenty courses), dance history, violin orchestral repertory, music business, and arts management. Workshops in such areas as creativity in piano teaching and Alexander Technique are also available. Ensembles open to adults include the Vanderbilt Orchestra, Vanderbilt Symphonic Choir, Vanderbilt Opera Theatre, flute choir, guitar ensemble, saxophone ensemble, trombone ensemble, tuba ensemble, percussion ensemble, fiddle ensemble, and chamber music.

The Pre-College Program

Blair offers individual instruction in orchestral instruments and in piano, organ, guitar, harp, saxophone, euphonium, recorder, viola da gamba, harpsichord, fiddle, dulcimer, mandolin, and voice. Group instruction is available in piano, guitar, fiddle, recorder, voice, and music for young children. Instruction using the Suzuki method is offered in violin, viola, and cello.

Class instruction is available in elements of music, basic musicianship, music theory and ear training, music literature/history, and violin orchestral repertory.

Ensemble training is offered in the four orchestras of the Nashville Youth Orchestra Program (Youth Symphony, Youth Repertory Orchestra, Youth String Orchestra, and Suzuki Reading Orchestra), the four choruses of the Blair Children's Chorus Program (Concert Choir, Blair Choristers, Young Singers of Blair, and Boychoir of Nashville at Blair), the Blair Suzuki Players, flute choir, guitar ensemble, and chamber music.

The Blair School Certificate Program provides a curriculum integrating advanced levels of performance study with training in music theory and history, performance classes, and recitals. Students who successfully complete the requirements for this program present a solo recital during their high school senior year and receive either the Certificate of Achievement or the

College Preparatory Certificate upon graduation. A variety of scholarships, for which students may audition, are awarded each year to outstanding pre-college students by the school, the Blair Guild, and by several donors. Students in many area high schools earn out-of-school credit towards high school graduation for individual study of music at Blair or through participation in the Nashville Youth Orchestra Program.

The Blair Concert Series

The school sponsors a variety of concert series that offer solo and chamber music performance to the University community and the city of Nashville. The Blair Concert Series, in particular, provides exceptional programming. The Blair faculty, including resident ensembles and soloists, is always the focus. Complimentary tickets are available *in advance* to anyone studying at Blair who presents a Blair identification card; other students pay half the general admission price.

Faculty members also present evening candlelight concerts for the University Club of Nashville. Numerous faculty recitals and other special programs are presented throughout the year. Weekly student recitals, held each Thursday at 3:10 p.m., are free and open to the public, as are all other student recitals, including junior and senior solo recitals and senior composition recitals. More than 120 concerts are presented at the school each year.

The BMI Composer-in-Residence program, sponsored by Broadcast Music Inc., brings visiting composers to campus every year. The three-day residency includes lectures, performances of the composer's works, and opportunities for interaction with students. Composers-in-residence for 2000/2001 are Steven Stucky and George Crumb. Stucky, a Guggenheim Award winner, is new music adviser for the Los Angeles Philharmonic and a Cornell University professor. He is published by Presser and Oxford University Press and recorded in CRI. Pulitzer Prize winner Crumb is celebrated around the world as one of the leading figures in contemporary music.

The Conversations Series features occasional informal lectures by, and on-stage interviews with, leading musical artists from both classical and popular fields. The series was inaugurated in 1995 with legendary guitarist Chet Atkins and has included violinist Joshua Bell, singer/songwriter Amy Grant, fiddler Mark O'Connor, and pianist Awadagin Pratt.

The John F. Sawyer Symposium on *Music and the Arts* was established to honor John F. (Del) Sawyer, founding director and former dean of the Blair School of Music. The inaugural event in 1996 featured a seminar and master class with Sawyer's mentor, master trumpeter and legendary teacher William Vacchiano.

Academic Regulations

I

Honor System

All academic work at Vanderbilt is done under the Honor System (see the chapter on Life at Vanderbilt.)

Faculty Advisers

All entering students are assigned faculty advisers who assist in the planning of programs and course schedules. Students are required to meet with their advisers before registration for each semester.

Class Attendance

Students are expected to attend all sessions of each class in which they are enrolled. Attendance is usually a factor in determining the final grade in a course. A student who fails to abide by the attendance policy set by the course instructor is subject to removal from the course.

Course Load

Tuition is charged on the basis of a normal course load of 12 to 18 semester hours. Course loads outside the norm, which must be recommended by the student's adviser and approved by the associate dean, are charged at an hourly tuition rate. The maximum course load for the summer session is 12 hours (6 hours for a summer half-session).

Residence Requirement

Students must complete at least half the credit required for the B.Mus. degree (63 hours) and four semesters, including the last two semesters, in residence at the Blair School. "In residence" is defined as enrolled for a minimum of 12 hours.

Advanced Placement

Advanced Placement with Credit. Advanced placement with credit is granted in a number of areas (see the chapter on Admission).

Advanced Placement without Credit. Students may be admitted to advanced music courses on the basis of placement tests at Blair, but no credit is awarded for music courses exempted.

B

Work at Another Institution

Pre-Freshman Work. Credit for pre-freshman college work may be given, subject to evaluation by the registrar and approval of the Dean. Credit for courses taken at another institution during the summer preceding a student's initial enrollment at Vanderbilt will be granted only if approval is obtained in advance from the associate dean. The course work must be comparable to courses offered at Vanderbilt.

Summer Studies. Students enrolled at Blair may receive transfer credit for summer courses taken at another four-year, fully accredited institution. This may include work at festivals or camps, if offered through an accredited institution. To qualify for summer credit, a student must be in good standing, consult the registrar, provide course descriptions, and obtain authorization in advance. Courses are often taken as free electives, but they may also earn liberal arts core credit. They may not fulfill the music core requirements, count as part of the last 30 hours of residence, serve as repeat credit, or be taken on a pass-fail basis.

Transfer Students

Transfer applicants must comply with University standards (see the chapter on Admission.) The required audition is of major importance in the evaluation of any application. Composition/theory applicants must submit a portfolio and interview with a member of the composition/theory faculty.

Transfer students must submit catalog copy and, in some cases, course syllabi from the previous institution(s). A level of performance study is assigned based on the entrance audition. Credit for courses is subject to evaluation; music courses may require an examination at Blair; and credit for non-music courses must be approved by the appropriate Vanderbilt department. Work transferred from another institution will not carry with it a grade point average; grades will show on the transcript but are not calculated in the Vanderbilt grade point average. Transfer students must complete at least half the credit required for the degree, or 63 hours, at the Blair School.

Registration

Registration is available to entering freshmen in June during Summer Academic Orientation or by mail. Other students register on dates specified each semester in the University Calendar. Packets are distributed to students' Blair mailboxes by the Blair registrar. Conferences with faculty advisers are required before students enter course requests via computer. Detailed information on registration using the computerized registration system, OASIS, is printed in the *Schedule of Courses*. Returning students who fail to register by the end of the Course Request Period, as specified in the University calendar (usually early in May for the fall semester or mid-November for spring semester) are charged a \$30 late registration fee.

Prior to registration, students should refer to the sample curriculum plans

in *Beginning at Blair*, the school's handbook for new students. Records should be checked regarding progress toward completing the following:

1. Music core
2. Liberal arts core
3. Additional major area requirements

A student whose course requests are denied (class full or cancelled) may select alternate courses when notified of open registration, with the assistance of the Blair registrar if needed.

Change of Course

Course changes may be made during Registration or the official Change Period (Drop/Add), normally the first week of classes, as published in the University Calendar. Wait lists for classes are established during the Change Period. All changes need the adviser's approval. A course dropped during the Change Period does not show on a transcript.

A course may be dropped prior to the deadline for withdrawal published in the University Calendar (usually Friday of the week after mid-semester). The approval of the adviser and the associate dean is required (see Grading System regarding withdrawal grades). Regularly enrolled students must maintain a minimum course load of 12 hours.

B

Grading System

- A: outstanding
- B: good
- C: satisfactory
- D: minimum pass work
- F: failure

Under certain circumstances the following grades may be awarded (see explanations below):

- Pass: D- or above
- W: withdrawal
- M: missed final examination (prior approval needed; see below)
- I: incomplete in some requirement other than final examination (see below)
- MI: missed final examination and incomplete in some other requirement

Plus and minus modifiers may be associated with letter grades A through D as shown in the table below. Grade point averages are calculated using indicated grade point values.

Defined Grades with Corresponding Grade Points Per Credit Hour

A	= 4.0	C	= 2.0
A-	= 3.7	C-	= 1.7
B+	= 3.3	D+	= 1.3

B	= 3.0	D	= 1.0
B-	= 2.7	D-	= 0.7
C+	= 2.3	F	= 0.0

Grade Point Average

A student's grade point average is obtained by dividing the total grade points earned by the number of hours for which the student registered, excluding courses audited or taken for no credit, those from which the student has withdrawn or for which an incomplete grade (*I*, *M*, or *MI*) has been authorized, and those that are completed with the grade *Pass*.

Pass-Fail Option

After the freshman year, students in good standing may take free elective courses in which they request a grade of *Pass* or *Fail*. Only one course (or 3 hours) per semester and a total of 18 hours may be taken on a Pass-Fail basis. The 18-hour maximum includes any courses offered only with Pass-Fail grading and any hours in which credit is earned by departmental examination and thus graded as *Pass*. Liberal arts core courses may not be taken on a Pass-Fail basis.

Students must file for the Pass-Fail option using OASIS, the computerized registration system, before the end of the official Change Period, usually the first week of classes. Also using OASIS, students may change from a Pass-Fail basis to a letter grade basis before the deadline for withdrawal published in the University Calendar, generally Friday of the week after mid-semester.

Students electing the Pass-Fail option must meet all course requirements and are graded in the usual way. Instructors are not informed of the names of students enrolled on a Pass-Fail basis. At the end of the semester, the registrar records grades of *D-* or above as *Pass*. Grades of *Pass* are not calculated in a student's grade point average; failing grades are.

Students electing coursework on a Pass-Fail basis need not be enrolled for 12 graded hours, but a student enrolled for fewer than 12 graded hours is not eligible for the Dean's List.

Deficiency Notices

During the week after mid-semester, the University Registrar distributes deficiency notices to students whose mid-semester grade in any course is a *C-* or below or whose work is incomplete (*I*). These are issued as a matter of information and warning. Deficiencies do not show on transcripts, but copies are sent to faculty advisers and to the parents of those students who are dependents of their parents or who have authorized such reports. A student who receives a deficiency notice is required to meet with the faculty adviser before the deadline for withdrawal at the end of the week. A student with deficiencies in two or more courses or any senior who receives a deficiency notice is also required to meet with the associate dean before the deadline for

withdrawal (usually Friday of the week after mid-semester).

W: Withdrawal

A student may withdraw from a course after the official Change Period and prior to the deadline for withdrawal published in the University Calendar, generally Friday of the week after mid-semester. A change of course card (green card) must be signed by the instructor, adviser, and associate dean and filed with the Blair School registrar. Students from other schools of the University must file with their home school registrar. Withdrawals after the published deadline result in an *F*. The grade *W* may be assigned by the associate dean to a student who seeks to withdraw from a course or from school after the deadline for reasons such as extended illness or unusual personal or family problems. No *W* grades are calculated in a student's grade point average.

M: Missed Final Examination

The grade *M* may be requested by a student absent from the final examination, but the grade *F* is given if a student could not have passed the course regardless of the examination score. To receive the grade *M*, the student must complete an authorization form available from the Blair registrar and present a written excuse to the instructor and the associate dean for authorization. A date by which the examination will be completed is scheduled jointly by the student and the instructor. A student who defaults on the final examination receives a score of zero. The grade *M* is not calculated in a student's grade point average, but a student who receives the grade *M* is not eligible for the Dean's List.

I: Incomplete

In the event that course work or quizzes are not completed by the last class day of the semester, the grade *I* may be requested by a student if the incomplete work is due to illness or circumstances beyond the student's control. With the instructor's permission and the approval of the associate dean, a student may be given an extension for missing work. Authorization forms are available from and must be filed with the Blair registrar before the grade *I* is given. A date by which the work must be completed is agreed upon by the student and the instructor. Work not completed by the extension date receives a zero. The grade *I* is not calculated in a student's grade point average, but a student who receives the grade *I* is not eligible for the Dean's List.

No-Credit Courses (NC)

Students who wish to take courses on a no-credit basis must file with the Blair registrar before the end of the Change Period, usually the first week of classes. Students must attend class and complete all course work. A grade is recorded on the transcript with the notation *NC*, indicating that it does not

count toward the degree.

No-credit courses count in the computation of a student's academic load and tuition, but not in the computation of the grade point average.

Auditing

Blair Courses. Regularly enrolled Blair degree students who wish to audit Blair courses need only obtain the consent of the instructor. The transcript will show no record of the audit unless the student registers for the course in an audit status with the Blair registrar. Students from other schools of the University must register to audit Blair courses. The audit will be indicated on the student's record with no grade. Auditing students do not participate in class discussion and are not evaluated. Auditing of individual or group performance instruction is not permitted, but students may audit performing ensembles with the instructor's consent.

Courses in Another School. A Blair student who audits a course in another school of the University must register for audit with the Blair registrar. The audit will be indicated on the student's record, although not with a grade, and will be considered, and paid for, as part of the regular load. Audit status in a course may affect full-time student status, since audited hours do not count as official "hours enrolled."

Repeated Courses

Certain courses, notably performing ensembles and variable credit performance instruction, may be taken more than once for credit. Otherwise, students may repeat any course to replace a grade, with no additional credit hours earned, subject to the following conditions:

Courses taken at Vanderbilt may not be repeated elsewhere.

A grade may not be replaced by a Pass-Fail grade.

A grade of W or I cannot replace a letter grade.

Only the most recent grade is calculated in the grade point average, but all grades show on the transcript.

Dead Week

The last week of classes, i.e., the last seven calendar days before the final examination period each semester, is designated as dead week. No examinations of any type, including quizzes and portions of final examinations, may be given during this time without the express written permission of the Dean and notification of students at least two weeks before dead week. Violations should be reported to the Dean.

Examinations

All examinations are conducted under the honor system. Primary and alternate exam schedules, which allow two hours for a final exam in each

course, are listed in the *Schedule of Courses*. The instructor may use the alternate schedule in addition to, but not instead of, the primary schedule.

Alternatives to standard in-class final examinations, such as term papers or take-home, self-scheduled, or oral examinations may be given at the instructor's discretion. A take-home exam is distributed at the last regular class meeting and must be completed by the latest time scheduled for the final examination.

Performance examinations are scheduled by department chairs. Students giving full recitals during the semester may be exempted from performance examinations at the discretion of the instructor. If performance examinations are scheduled on a reading day (the day after classes end, when no course examinations are scheduled), students are also given the choice of a different day for their performance examinations.

A student who misses a final examination may be eligible to receive the grade *M* (see Grading System).

Grade Reports

Grade reports and faculty critiques of performance examinations will be sent to students as soon as possible at the end of each semester. Grade reports are sent to parents of those students who are dependents of their parents or who have authorized such reports.

A grade reported and recorded in the University Registrar's office may be changed only upon written request of the instructor, on certification that the original report was in error, and with approval of the Blair registrar.

Academic Standards

Class Standing

To qualify for sophomore standing, a student must complete a minimum of 24 hours with a grade point average of 1.8.

To qualify for junior standing, a student must complete a minimum of 54 hours with a grade point average of 1.9.

To qualify for senior standing, a student must complete a minimum of 90 hours with a grade point average of 2.0

Students who fail to qualify for the appropriate class standing within two semesters are placed on probation. Students on probation must qualify for class standing in one additional semester or risk being dropped from the University.

Academic Probation

Freshmen are placed on academic probation if they do not complete one writing course or if their grade point averages are below 1.8 overall or 2.0 in music. Other students are placed on academic probation if they fail to qual-

ify for class standing or if their grade point averages fall below 1.8 overall or 2.0 in music. Incomplete grades may adversely affect class standing or grade point averages. Students on academic probation may not transfer summer study credit, elect to take courses on a Pass-Fail basis, earn credit by departmental examination, or participate in any extracurricular performance activity. They are required to participate in a special program in the Learning Center. Students will be placed on probation no more than twice. Students who are deficient a third time will be dropped from the University.

Scholarship Student Requirements

Students receiving honor scholarships through Blair School of Music must be enrolled in all assigned music courses, qualify for the appropriate class standing, and maintain each year minimum grade point averages of 2.0 overall and 2.7 in music. Students receiving the Harold Stirling Vanderbilt Honor Scholarship must maintain a minimum 3.0 grade point average overall and 3.0 in music. Additional requirements may be stipulated in scholarship award letters.

Honor scholarship awards are considered for renewal annually. Student work will be reviewed at the end of spring semester for possible renewal for the following academic year. Incomplete grades may adversely affect renewal.

Students receiving scholarships or grants as part of their financial aid packages (not honor scholarships) must qualify for the appropriate class standing in order to be considered for renewal each year. Students receiving federal aid are expected to make satisfactory academic progress as outlined in the chapter on Financial Information.

Graduation Requirements

Candidates for degrees must have completed 126 hours and all curriculum requirements, have passed all prescribed examinations, and be free of indebtedness to the University.

Exceptions to stated degree requirements and procedures must be approved by the Curriculum Committee as the representative body of the faculty in matters pertaining to the curriculum.

The minimum grade point averages required for graduation are 2.0 overall and 2.0 in music. A student taking a second major must earn a 2.0 in that major in order for it to be certified on the transcript.

If requirements for graduation change, students may elect to be bound by requirements published in the *Undergraduate Catalog* in either their entering or their graduating year.

Degree Audit Reports

A degree audit report is prepared by the Blair registrar and included in each student's registration packet during the spring semester of the junior year, showing total hours earned, degree requirements completed, and those

still to be met. Students should examine these reports carefully with their faculty advisers. Problems or suspected errors should be discussed immediately with the Blair registrar.

Credit by Departmental Examination

In certain circumstances, students may be awarded course credit (a maximum of 8 hours) by departmental examination. This procedure is distinct from the awarding of credit through the College Board Advanced Placement Tests or the International Baccalaureate. Students apply for credit by examination through the Blair registrar.

To earn credit by departmental examination, students must be enrolled for at least 12 hours, be in good standing, be recommended by their advisers, and have the approval of the appropriate department and the Dean. Grading is on a Pass-Fail basis. The maximum of 18 hours toward the degree graded as Pass includes credit earned by examination.

Students may attempt to earn credit by examination in no more than two courses in one semester, only once in any course in one semester, and no more than twice in the same course.

A \$50 fee is charged for administering the examination unless credit earned by examination exceeds the normal 18-hour maximum load, in which case tuition must be paid at the hourly rate for those hours in excess of 18, and the examination fee is waived.

Senior Re-examination

Candidates for graduation who fail one exam and therefore one course in the final semester of the senior year are allowed one re-examination, provided the course failed would prevent the student's graduation and provided the student could pass the course by passing the re-examination. The re-examination is given after all grades for the senior year have been received by the registrar. Students taking a senior re-examination receive either *D-* or *F* in the course.

Independent Study

Students must obtain permission to enroll in Independent Study from the instructor of their choice prior to registration. Independent Study authorization forms are available from the Blair registrar. The instructor's signature on the authorization form indicates a willingness to supervise the Independent Study project. A contract or study plan, approved by the instructor in consultation with the appropriate department chair and the associate dean, must be submitted to the Blair registrar by the tenth calendar day after classes begin. If no plan is submitted, the student will be dropped from Independent Study. An Independent Study project should result in a substantial written report, paper, or lecture/recital. The report, tape, or some physical manifestation of

the project should be retained by the instructor. Independent Study projects proposed by students in the College of Arts and Science must be approved by Dean Paul Elledge.

A student may register for a maximum of 3 hours in Independent Study in a semester. A student may count a total of 6 hours in Independent Study toward the degree. A faculty member may supervise no more than four students per semester in Independent Study projects.

Independent Study cannot substitute for courses which are part of the curriculum.

Internships

The Vanderbilt Career Center assists students interested in internship opportunities in the music industry and elsewhere; there are opportunities in many states of the U.S. and also abroad, both during the academic year and in the summer. A student serving as an intern may develop an Independent Study project as a corollary if credit is desired. The project must be consistent with the regulations for any Independent Study.

Solo Recitals

Pre-Recital Hearing

Any student who wishes to give a recital in the Turner Recital Hall must pass a hearing, held at least three weeks before the recital. After establishing a recital date, the student's instructor will assemble a recital hearing committee, consisting of two additional faculty members, one of whom must be from outside the student's performing area. The instructor must notify the recital hearing committee, in writing, of the hearing date, recital date, time, and place.

For a junior or senior recital, the repertory must encompass three major style periods; at least one twentieth-century work must be included in either the junior or senior recital. The hearing committee may hear any of the recital repertory. Grading of the hearing is on a Pass-Fail basis, with written faculty comments. If a student fails the hearing, another must be scheduled. Only two recital hearings in one semester are permitted.

Recital and Recital Committee

For recitals given for credit, the recital committee is the same as the hearing committee whenever possible. The final grade is a composite of those of the committee members, with the instructor's grade valued at 50 percent. Copies of committee member's grades are kept by the instructor. Recitals not given for credit are not graded; they involve a hearing committee but not a recital committee.

Extracurricular Performance

Students must be in good standing and have the consent of their private instructors in order to participate in any extracurricular performance activities, including in-school accompaniment that is not required by a student's degree program or honor scholarship.

Recital Attendance

Each semester in residence, students (except graduating seniors in their final semester) are required to register for and attend weekly student recitals/convocations on Thursdays at 3:10 p.m., as well as a minimum of ten other concerts and recitals, including

1. A solo faculty recital
2. The Blair String Quartet
3. The Blair Woodwind Quintet
4. The Blair Chamber Players or BMI Composer-in-Residence
5. An orchestral concert
6. A choral, opera, or faculty vocal performance
7. Any faculty concert
8. Three junior, senior, or other student recitals

The course receives zero credit hours but is graded on a Pass-Fail basis and listed on students' transcripts. Attendance sheets are provided in the lobby before and after recitals for students to register their attendance. Two absences from noon recitals are permitted each semester. If a student misses more than two noon recitals or any of ten other concerts, the requirement is not fulfilled. Make-up assignments, if needed, can be obtained from Professor Michael Hime. Information regarding students' concert attendance records is distributed at mid-semester and again after the last recital of the semester. It is each student's responsibility to seek advice regarding needed make-ups. The final report is due the last day of exams. Students must plan and keep up with their concert attendance. Except for weekly student recitals, performances in which students are participants do not fulfill the attendance requirement for the performer.

Change of Address

Any change of address should be reported to the Blair registrar and the University Registrar. The University will consider notices or other information delivered if mailed to the address currently on file.

Leave of Absence

A student in good standing may, with the approval of the associate dean, take leave of absence for one or two semesters. Application forms, available

from the Blair registrar, must be submitted by 1 December for spring semester leave or by 1 May for fall semester.

Students planning to study elsewhere while on leave (elective courses) must have prior approval if credits are to be transferrable. Upon the student's return, a performance examination during the first two weeks of the semester may be needed to determine the student's standing in the major performance area.

Registration materials are mailed to students on leave. Students failing to register by the dates printed in the University calendar (early May for fall semester, mid-November for spring) are withdrawn from the University and must apply for readmission if they wish to return.

Withdrawal from the University

Students proposing to withdraw from the University during any semester must report to the Blair registrar to initiate proper clearance procedures. Students are graded on the same basis as if withdrawing from a course. Students who withdraw before the end of the eighth week of classes receive a partial refund of tuition (see the chapter on Financial Information). Students intending to withdraw from the University for the following semester should notify the Blair registrar by 1 December for spring semester or by 1 May for the fall semester.

Students who have withdrawn from the University without filing a Leave-of-Absence form must apply for readmission if they wish to return.



Honors

I

Founder's Medal

The Founder's Medal, signifying first honors, was endowed by Commodore Cornelius Vanderbilt as one of his gifts to the University. The recipient is named by the Dean after consideration of faculty recommendations as well as grade point averages of the year's highest ranking graduates.

Academic Honors Designation

Honors, which are noted on diplomas and published in the *Commencement Program*, are earned as follows:

Summa Cum Laude. Students earning a grade point average of 3.75 or above.

Magna Cum Laude. Students earning a grade point average of 3.5 or above.

Cum Laude. Students earning a grade point average of 3.25 or above.

Dean's List

Students are placed on the Dean's List if they have a minimum 3.5 grade point average while carrying 12 or more graded hours with no *F, M, I, MI*, or missing grades in any course, including non-credit courses.

Pi Kappa Lambda

Election to Pi Kappa Lambda National Music Honor Society signifies superior accomplishment in the field of music. Students elected to membership must be outstanding musically and scholastically and ranked in the highest 20 percent of the senior class or the highest 10 percent of the junior class. The Eta Iota chapter was installed at Vanderbilt on April 8, 1992. Professor William Wiggins serves as its president.

Awards and Prizes

Several awards are presented to students at the Blair School of Music. Announcement is made at the final student recital/convocation of the spring semester. Each carries a monetary stipend. Awards, which are published in the *Commencement Program*, are as follows:

THE MARGARET BRANSCOMB PRIZE is given annually to a Blair freshman judged by the

faculty to have the musical and personal qualities that best exemplify the spirit and standards of the school. The prize was established by family and friends in memory of Margaret Branscomb, wife of the late Vanderbilt Chancellor Emeritus Harvie Branscomb.

THE SUE BREWER AWARD was established by the Songwriters Guild Foundation in memory of Sue Brewer, who befriended many of Nashville's struggling songwriters in the late 1960s and 1970s. It is awarded for excellence to a student pursuing a degree in guitar or composition/theory.

THE ROBIN DICKERSON AWARD was established in 1995 in honor of soprano Robin Nell Dickerson, B.Mus. '94, by Blair faculty and students. It is awarded by the voice faculty to an outstanding voice major for excellence in performance and scholarship.

THE JEAN KELLER HEARD PRIZE is designed for a string student seeking the Bachelor of Music degree at Blair. The scholarship fund was established by the Vanderbilt Women's Club to honor violinist Jean Keller Heard, the wife of Vanderbilt's fifth Chancellor, Alexander Heard. The fund continues to grow as additional gifts in honor of Mrs. Heard are given to the school.

THE S. S. AND I. M. F. MARSDEN AWARD IN MUSICAL SCHOLARSHIP is awarded annually to a Blair student for excellence in scholarship (i.e., a written paper), especially for a topic that might lie outside the normal core of scholarship. Honors projects, independent study projects, and substantial class papers are eligible for consideration for the award.

THE DELENE LAUBENHEIM MCCLURE MEMORIAL PRIZE is given to a voice major who exhibits excellence in opera performance. This prize was established by alumni and faculty of the Blair School of Music and other friends of Delene Laubenheim McClure, B.Mus. '91, whose untimely death foreshortened a promising career in music. Through her participation in the first opera productions at Blair, Dede helped set a standard for excellence in performance.

THE L. HOWARD "ZEKE" NICAR AWARD is presented annually to the most outstanding woodwind or brass student. The award was established by family, faculty, and friends to honor the memory of the Blair School's first Assistant Dean for Admissions.

THE PRESSER AWARD is presented to a junior for musical and academic excellence and is the most prestigious honor available to a junior at Blair. At least one third of the student's credits must be outside the field of music. The recipient must have a cumulative grade point average of 3.25 and have been named to the most recent Dean's List. The award honors the memory of Theodore Presser, American publisher and musical philanthropist.

THE DAVID RABIN PRIZE was established by family and friends in memory of Dr. David Rabin, professor of medicine and of obstetrics and gynecology at Vanderbilt University Medical School, 1975 to 1984. The prize is awarded annually, based on excellence in musical performance, to a student enrolled at Blair. The fund continues to grow as contributions in honor of Dr. Rabin are given to the school.

THE MARTIN WILLIAMS AWARD was established in memory of Martin Williams, former director of the Smithsonian Institution's Jazz Program and Adjunct Professor of Jazz History at Blair. It is presented to the student writing the most outstanding class paper during the academic year. The fund continues to grow as gifts honoring Mr. Williams are given to the school.

Courses of Study

I

Course Numbers and Symbols

100-level courses are primarily for freshmen and sophomores.

200-level courses are normally taken by juniors and seniors but are open also to qualified sophomores and freshmen.

Bracketed figures indicate length of a course and semester hours credit—e.g., [3] for one semester and [3–3] for a two-semester course.

220a–220b indicates a year course. The first semester may be taken alone; but to take the second semester students must have the consent of the instructor.

The semester in which a course is offered is indicated by the word FALL or SPRING in the course description.

The University reserves the right to change the arrangement or content of courses, to change the texts and other materials used, or to cancel any course on the basis of insufficient enrollment or for any other reason. Some courses are tentative. Current information is available during registration. A definitive *Schedule of Courses* is published each semester. Except for certain specified performance courses, it is the responsibility of each student to avoid duplication, in whole or in part, of the content of any courses offered toward the degree. Such duplication may result in withdrawal of credit.

B

Composition/Theory and Keyboard Harmony

Courses designed for the general university student (MUSC 100, 105, 106, 107, 116, 118, 119, 120a–120b, 191) focus on the recognition of stylistic and structural patterns. This skill enhances the non-technical listener's awareness—both analytical and affective—of creative expression in music. Several courses fulfill the humanities requirement for students in other schools of the University.

The music theory sequence I–V (MUSC 121, 122, 220, 221, 222) introduces serious students of music, whether majors or not, to the principles of harmony, voice-leading, counterpoint, structure, and analytical/compositional techniques in a variety of historical styles; further, it fosters the all-important skills of hearing tonal relationships with facility and of communicating orally the structures and materials of music.

100. Songwriting and Elements of Music Theory. Introduction to fundamental elements of music as they apply to popular songwriting techniques. Selected readings on the technical and aesthetic facets of songwriting. Listening analysis and discussion of songs in a variety of current styles. Selected aural skills as they relate to the songwriter's craft. Class visits by successful songwriters. Designed for students with little or no technical training in music. Does not count toward a major or minor in music. FALL, SPRING. [3] Walker.

105. The Romantic Generation. An exploration of outstanding works by Berlioz, Chopin, Liszt, Mendelssohn, and Schumann (all born between 1803 and 1811). Focus on structural

analysis, stylistic innovations, mutual musical influences, and relations to classical models. Investigations into the meanings of musical Romanticism. [3] Michael Rose. (Offered alternate years)

106. Musical Nationalisms. An exploration of selected works by 19th- and 20th-century composers of various nationalities who draw on folk and ethnic sources in their works. An investigation of their aesthetic principles and compositional techniques. [3] Michael Rose. (Offered alternate years)

107. Beethoven and The Beatles. An analytical study of the music of Beethoven and The Beatles in their cultural contexts. Focus on analogous stylistic issues of consolidation and innovation. For students without formal training in music theory. Does not count toward a major or minor in music. SPRING. [3] Michael Rose. (Offered 2001/2002)

116. Discovering Music Creatively: Composition for the Novice. An investigation of the creative act through guided projects in composition, listening, reading, and discussion. Selected fundamental elements of music applied to aesthetically sophisticated creative projects modeled on concert music from Debussy to Cage to the present. Designed for students with little or no technical training in music. Prerequisite: any MUSC or MUSL course. Not open to majors or minors in music. [3] Kurek. (Not currently offered)

118. Mozart. The music of Wolfgang Amadeus Mozart. Techniques for listening to different genres of classical music. Emphasis on style and structure, music theory and history, and Mozart's life and character. No musical background assumed. FALL. [3] Michael Rose.

119. Motive, Counterpoint, and Structure: Bach, Brahms, and Bartok. Analysis of the compositional techniques shared by all three composers. For students without formal training in music theory. [3] Michael Rose. (Offered alternate years)

120a–120b. Introduction to Music Theory. Presents 18th- and 19th-century harmonic practice. Designed to develop music theory skills through written exercises of figured and unfigured basses; harmonization of melodies; and study of ear training, using sightsinging exercises and melodic and harmonic dictation. Available to Arts and Science students for professional credit. Not open to students who have completed 121 or 122. Does not count toward a major in music. [3–3] Link.

121. Music Theory I: Tonal Harmony and Voice-Leading. Fundamentals of tonal harmony (scales, functional triads, seventh chords), introduced through the principles of Bach chorale style. Emphasis on voice-leading exercises. Prerequisite: placement test. Available to Arts and Science students for professional credit. FALL. [2] Slayton, Carl Smith.

121e. Ear Training and Sightsinging I. Aural skills developed through sightsinging and harmonic/melodic dictation. Usually taken concurrently with 121. Prerequisite: placement test. Available to Arts and Science students for professional credit. FALL. [1] Bingham, Page.

122. Music Theory II: Tonal Harmony and Voice-Leading. Advanced tonal harmony (secondary dominants, modulations, altered chords, etc.), demonstrated through Bach chorale style, with further illustrations from music of various historical periods. Prerequisite: 121. Available to Arts and Science students for professional credit. SPRING. [2] Slayton, Carl Smith.

122e. Ear Training and Sightsinging II. Continuation of 121e. Usually taken concurrently with 122. Available to Arts and Science students for professional credit. SPRING. [1] Bingham, Page.

123e. Ear Training and Sightsinging III. Continuation of aural skills developed in 121e and 122e. Prerequisite: 122e. Available to Arts and Science students for professional credit.

FALL. [1] Bingham, Page.

124e. Ear Training and Sightsinging IV. Continuation of aural skills developed in 123e. Prerequisite: 123e. Available to Arts and Science students for professional credit. SPRING. [1] Bingham.

125e–126e. Advanced Ear Training and Sightsinging. Further development of aural skills, including techniques for hearing/singing atonal music. Prerequisite: 124e. [1–1] Bingham. (Not currently offered)

131a–131b. Keyboard Harmony I and II. Development of basic technique, reading proficiency, elementary transposition. Diatonic harmony at the keyboard. Prerequisite: placement test. Available to Arts and Science students for professional credit. Not open to students who have completed 133a or 133b. [1–1] Krieger, Melissa Rose, and Wade.

132a–132b. Keyboard Harmony III and IV. Harmonization of melodies, improvisation of small musical forms, transposition in all keys with cadences and modulations, four-part score reading. Prerequisite: 131b. Available to Arts and Science students for professional credit. Not open to students who have completed 133a or 133b. [1–1] Krieger, Melissa Rose, and Wade.

133a. Accelerated Keyboard Harmony I. Sight reading, harmonic analysis, score reading, harmonic reduction from piano score, improvisation, realization of figured bass. Designed for keyboard majors and others with appropriate background. Prerequisite: placement test. Available to Arts and Science students for professional credit. Not open to students who have completed 131a–131b or 132a–132b. FALL. [2] Krieger.

133b. Accelerated Keyboard Harmony II. Intensive study of materials presented in 133a. Advanced harmonization of melody, modulation, and transposition. Prerequisite: 133a. Available to Arts and Science students for professional credit. Not open to students who have completed 132a–132b. SPRING. [2] Krieger.

191. Sonata Forms. An analytical survey of sonata forms in works by Classical, Romantic, and Modern composers. Emphasis on structural listening, not score reading. Prerequisite: one course from MUSC 105, 106, 107, 118, 119; MUSL 140, 141, 144, 183. [3] Michael Rose. (Offered alternate years)

216. Computer Music. The computer as a tool for musical sound synthesis, digital instrument design, and computer-assisted composition and performance. Styles and techniques in computer music in the commercial and fine arts. Programming and computer composition. Prerequisite: any computer science course or consent of the instructor. Available to Arts and Science students for professional credit. FALL, SPRING, MAY. [3] Landes.

220. Music Theory III: Tonal Harmony and Tonal Counterpoint. Continuation of 122. Tonal harmony and voice leading, including elements of chromatic harmony and elements of counterpoint and fugue in the inventions and fugues of J. S. Bach. Prerequisite: 122. Available to Arts and Science students for professional credit. FALL. [3] Slayton.

221. Music Theory IV: Form in Tonal Music. A study of the formal principles of music, beginning with the phrase and progressing through large-scale standard forms (sonata, rondo, etc.). Examination of scores in a variety of styles and textures, including scores exhibiting chromatic harmony. Concepts applied to original compositions. Prerequisite: 220. Available to Arts and Science students for professional credit. SPRING. [3] Staff.

222. Music Theory V: Post-Romantic and Twentieth-Century Techniques. Analysis of the scores and compositional techniques of Debussy, Schoenberg, Webern, Stravinsky, Bartok, Crumb, and others. Concepts applied to original compositions. Prerequisite: 122e,

221. Available to Arts and Science students for professional credit. FALL. [2] Kurek.

223. Choral Arranging. Technical and aesthetic considerations involved in arranging (and composing) for combinations of voices, from two-part to larger choral ensembles, accompanied and unaccompanied. Score analysis and composition projects. Prerequisite: 122 (Theory II) or permission of the instructor. SPRING. [3] Smith.

224. Orchestration. Technical and aesthetic considerations in composing or transcribing for individual orchestral instruments, sections, and full orchestra. Score analysis and composition projects. Prerequisite: 122. Available to Arts and Science students for professional credit. SPRING. [3] Kurek.

225. Seminar in Advanced Analysis. Intensive investigation of the principle of chromatic harmony through the analysis of selected works of the late 19th century. Prerequisite: 222. SPRING. [2] Staff. (Offered alternate years; offered 2000/2001)

227. Individual Theory Instruction (Elective). Individual instruction and seminars. Score analysis and style-study composition. Prerequisite: 221 and consent of instructor. [Variable credit: 1–3 each semester] Kurek and Michael Rose.

229. Senior Thesis. Completion of an extended paper based upon musical analysis. Open only to composition/theory majors. Topic subject to approval. Progress monitored via tutorials. [1] Kurek and Michael Rose.

230. Introduction to Composition. An introduction to compositional techniques including a study of composers and their work. Principles of scoring, the study of notation including experimental types. Prerequisite: 120a, 121, or equivalent skills. Available to Arts and Science students for professional credit. SPRING [3] Kurek.

230e. Composition. (Elective) Individual instruction and seminars. A variety of media, styles, and forms. Electronic and experimental techniques. Prerequisite: 230 and consent of instructor. [Variable credit: 1–3 each semester] Kurek and Michael Rose.

231a–231b. Composition. Individual instruction and seminars. A variety of media, styles, and forms. Electronic and experimental techniques. Prerequisite: 230 and consent of instructor. [3–3] Kurek and Michael Rose.

232abcd. Advanced Composition. Continuation of 231a–231b. [4 each semester] Kurek and Michael Rose.

299. Senior Composition Recital. Planning, rehearsing, and performing in a concert devoted solely to a student's own work. Open only to composition/theory majors. Corequisite: 232d. [1] Kurek and Michael Rose.

Dance History

Courses in dance history introduce students to representative masterworks from dance literature and help them develop an analytic framework, both historical and kinesthetic, with which to study these works. Courses are designed to broaden students' appreciation of aesthetic and social aspects of dance forms associated with various cultures.

110. Introduction to the Dance. Survey of religious, social, and theatrical dance forms, dating from ancient Greek Dionysian dances to the avant garde dance of the 1960s. Read-

ings, video and film research, and study of live performance. [3] Needham. (Not currently offered)

111. History of Ballet and Modern Dance. Dance styles from the Romantic period to the present. Emphasis on world-wide diffusion of the Russian ballet and the avant garde. Readings, video and film research, and study of live performance. [3] Needham. (Not currently offered)

112. Dance in American Culture. Popular American dance forms from the seventeenth century to the present. Sacred dances of American Indians, history of ballroom dancing, and the emerging dominance of African American social dances. Readings, video and film research, and study of live performance. FALL. [3] Needham. (Offered alternate years; offered 2001/2002)

113. Theatrical Dance in America. Development of original American theatrical dance forms: modern dance, classical ballet, Hollywood musical, and African American jazz dance. Readings, video and film research, and study of live performance. FALL. [3] Needham. (Offered alternate years; offered 2000/2001)

114. Dance Roots: Black Dance in America. African American dance, traced from its African roots to Broadway, concert dance, and Hollywood movies. The history of jazz, jitterbug, hip-hop, and other American popular dance forms. African American pioneers of concert dance. Discussion, readings, films, live performance, and guest speakers. SPRING. [3] Needham.

210. The Female Dancing Body. Historical views of the body, dance, and gender. Theoretical and analytical interpretations of the female dancer as an object of desire. Topics include body control, empowerment, pleasure, otherness, and the contemporary female choreographer. Lectures, readings, film, live performances. SPRING. [3] Needham. (Offered alternate years; offered 2001/2002)

B

Ensemble

Four major performing ensembles, the Vanderbilt Symphonic Choir, the Vanderbilt Orchestra, the Vanderbilt Wind Ensemble, and the Vanderbilt Opera Theatre, are sponsored by Blair School of Music. A large number of chamber music groups also exist, offering students a wide variety of ensemble experiences.

Auditions. Auditions for the major performing ensembles are held just before classes start each semester. Students must audition every year. Assignment is at the discretion of the director. Openings at mid-year are not guaranteed. Students need the approval of the faculty chamber music coordinator before enrolling in chamber music; the Blair registrar can assist.

Credit. Students may register for course credit or on a no-credit (NC) basis.

101a. Vanderbilt Symphonic Choir. Open by audition to all members of the Vanderbilt community, this choral ensemble performs literature requiring large forces, such as masses and oratorios. At least one formal concert each semester and at least one work each year with the Vanderbilt Orchestra. Available to Arts and Science students for professional credit. [1] Childs.

101b. Vanderbilt Orchestra. Open by audition to all Vanderbilt students, the orchestra performs standard symphonic repertoire primarily from the Classical and Romantic periods. At

least two formal concerts are presented each semester. Available to Arts and Science students for professional credit. [1] Fountain.

101e. Vanderbilt Wind Ensemble. Open by audition to all Vanderbilt students, the ensemble performs standard and new repertoire from Baroque to Contemporary. Two formal concerts are presented each semester. Available to Arts and Science students for professional credit. [1] Sagen.

101f. Vanderbilt Opera Theatre. Open by audition to all Vanderbilt students. Concert material is chosen from standard operatic repertoire, from Baroque to Contemporary. At least one production is presented each semester. The format ranges from a collection of scenes from several operas to the production of an entire opera. Available to Arts and Science students for professional credit. SPRING. [1] Shay.

171. African Performing Ensemble. Open to all members of the Vanderbilt community, this course provides a laboratory and performance experience drawing on traditional African musical instruments (Drums, percussion, winds) with an emphasis on West African (Ghana) and East African (Uganda) music and dance repertoires. Lecture-demonstrations and rehearsals in one weekly two-hour session. At least one public performance each semester. No previous experience required. FALL, SPRING. [1] Ahima, Barz.

201a. Blair Chamber Choir. Open by audition to all Vanderbilt students, this select sixteen-voice chamber ensemble performs music in a variety of styles. At least one formal concert each semester. Corequisite: MUSE 101a. Available to Arts and Science students for professional credit. [1] Childs.

201c. Instrumental Chamber Music. Open to all Vanderbilt students by audition or upon recommendation of the private instructor. Size of ensembles may vary. One hour weekly coaching for vocal/instrumental duos or ensembles, including singer/piano duos. Two hours of additional rehearsal each week. Available to Arts and Science students for professional credit. [Variable credit: 1–2 each semester] Kochanowski, C. Lee, and staff.

201d. Vocal Chamber Music. Open by consent of the instructor. One hour weekly coaching for vocal/instrumental duos or ensembles, including singer/piano duos. Two hours of additional rehearsal each week. Available to Arts and Science students for professional credit. [Variable credit: 1–2 each semester] Melissa Rose.

201e. Chamber Music: Sonata Class for Strings and Piano. Open by consent of instructor. Two hours of class and at least one hour of additional rehearsal each week. [Variable credit: 1–2 each semester] Dorfman and Plummer.

201f. Chamber Music: Accompanying. Open to piano majors (performance or musical arts) or by consent of instructor. One hour of coaching and at least two hours of additional rehearsal each week. [Variable credit: 1–2 each semester] Dorfman and Nies.

201g. Chamber Music: String Quartet. Open by consent of instructor. One hour of coaching and at least two hours of additional rehearsal each week. [Variable credit: 1–2 each semester] Kochanowski.

201L. Chamber Music: Brass Quintet. Open by consent of instructor. [1] Borden.

201w. Chamber Music: Woodwind Quintet. Open by consent of instructor. [1] Estill and Taylor.

202a–202b–202c–202d. Blair Collegium: Instrumental Ensembles. Open by audition to all Vanderbilt students or upon recommendation of the private instructor, the small instrumental ensembles are devoted to the performance of early music on authentic instruments. (202a: viols; 202b: recorders; 202c: mixed, including brass; 202d: continuo). 1–2 hours of

rehearsal each week. Available to Arts and Science students for professional credit. [1] Brecht and Williams.

203. Flute Choir. Open by consent of instructor. Available to Arts and Science students for professional credit. [1] Rogers.

204. Guitar Ensemble. Open by consent of instructor. Available to Arts and Science students for professional credit. [1] Phillips.

205. Trombone Ensemble. Open by consent of instructor. Available to Arts and Science students for professional credit. [1] Borden.

206. Brass Choir. Open by audition to all Vanderbilt students, this chamber ensemble of 10–20 brass players performs concert repertoire from the late Renaissance to Contemporary. At least one formal concert is presented each semester. Available to Arts and Science students for professional credit. FALL. [1] Staff.

207. Saxophone Ensemble. Open by consent of instructor. Available to Arts and Science students for professional credit. [1] F. Kirchner.

208. Woodwind Choir. Open by audition to all Vanderbilt students, this chamber ensemble of 8–20 woodwind players performs concert repertoire from early Classical to Contemporary. At least one formal concert is presented each semester. Available to Arts and Science students for professional credit. FALL. [1] C. Lee.

210. Percussion Ensemble. Open by consent of instructor. Available to Arts and Science students for professional credit. [1] Wiggins.

211. Tuba Ensemble. Open by consent of instructor. Available to Arts and Science students for professional credit. [1] Davis.

212. Fiddle Ensemble. Open by audition to all Vanderbilt students with fiddling experience. One hour weekly coaching by visiting fiddlers from the community. Fiddle tunes, harmonies, and improvisation ideas in various styles of fiddle music, including old-time, bluegrass, swing, Celtic, and contemporary. One performance each semester. Available to Arts and Science students for professional credit. [1] Plohman.

299. Vanderbilt New Music Ensemble. An ensemble dedicated to modern music comprising one each of the major instruments of the orchestra. Admission through competitive audition. At least one major performance is presented. Available to Arts and Science students for professional credit. FALL. [1] Fountain.

Music Literature and History

Courses in the literature and history of music are designed to develop students' understanding of music within the prevailing social and cultural contexts; to establish a framework for critical evaluation of music and musical practices; to achieve a working familiarity with recognized, or at least representative, masterworks of musical literature; to develop students' ability to speak articulately about the styles and substance of music; and to equip students with analytic and literary skills and with a working knowledge of the bibliography of music. Courses appropriate for non-music majors include MUSL 114, 115W, 140, 144, 145, 147, 148, 149, 150, 160, 170, 171, 183, 200, 218,

247, 264, and 294. Most fulfill the humanities requirement for students in Peabody College and the Engineering School. Some fulfill the social science requirement. Six courses (MUSL 115W, 140, 141, 160, 183, and 200) fulfill the humanities requirement of the CPLE for students in the College of Arts and Science. One, MUSL 147 (American Music), fulfills the American Component of the History and Culture requirement; two, MUSL 170 (Asian Musical Cultures) and MUSL 171 (African Music), fulfill the International Component. MUSL 115W fulfills the CPLE writing requirement. Several courses fulfill requirements for majors in African American Studies, American and Southern Studies, and European Studies in the College of Arts and Science.

Honors Program in Literature and History

The honors program in music literature and history is designed to afford superior students the opportunity to pursue more intensive work within the field of musicology or ethnomusicology, culminating in the preparation of a senior honors thesis. The course of study includes seminar work as well as independent study and writing under the supervision of a thesis adviser. Students who want to do honors work should contact the chair of the musicology department in the fall of their junior year. Departmental approval of a formal honors thesis prospectus must take place during the junior year. (Minimum requirements are a 3.0 GPA overall and 3.3 in music literature and history courses.)

Students accepted into the program must take a total of 9 credit hours: MUSL 294, Selected Topics in Music History (3 hours), and MUSL 299a–299b, Senior Honors Thesis (6 hours). In addition, successful completion of the honors program requires an oral defense of the honors thesis before a faculty committee. This defense will occur at the end of the spring semester of the senior year. Those enrolled in the program who successfully complete its requirements may graduate with Honors or High Honors in music literature and history.

114. Survey of Electronic Music. Development of *musique concrète*, electronic music and computer music since 1945. The theory, technique, and aesthetic of electro-acoustic music. [3] (Not currently offered)

115W. Freshman Seminar. Music and Modernism: The Plunge into the Abyss. An investigation into the dramatic changes in Western musical style at the beginning of the twentieth century (including Stravinsky, Schoenberg, and Bartok). Listening assignments and discussions of music; readings and discussions on the cross-currents among music, literature, and the plastic arts. Major focus is on the relationships between Modernism and tradition, and on the lines of force between historical events and artistic production. [3] Michael Rose. (Offered alternate years; offered 2001/2002)

115W. Freshman Seminar. Shakespeare and Music. Investigates a small cross-section of the thousands of works inspired by Shakespeare's dramas during the last 300 years, ranging from opera to film scores and Broadway renditions, from "authentic" music within Shakespeare's plays to nineteenth-century incidental music to symphonic compositions. Examines the relationship between changes in approach to Shakespeare on the stage and changes in the style, scope, and content of the music that claims a Shakespearean iden-

tity. No musical background required. [3] Cyrus.

140. Introduction to Music Literature. An introduction to the literature of music from A.D. 600 to the present through a study of selected works. Extensive listening is required. Not open to students who have completed 141. Does not count toward a major in music. FALL, SPRING. [3] Hime.

141. Survey of Music Literature. A historical and analytical survey from A.D. 600 to the present. Designed for music majors, minors, and others with appropriate musical background. Emphasis on aural analysis and score study of selected masterworks. Not open to students who have completed 140. FALL, SPRING. [3] Barz, Cyrus, Link.

144. Survey of Orchestral Music. Orchestral literature with emphasis on the evolution of symphonic form and style, through the study of selected masterworks of the standard repertoire. FALL. [3] Staff. (Offered alternate years; offered 2000/2001)

145. Survey of Choral Music. Choral literature, sacred and secular, from the Renaissance to the present, with emphasis on a study of selected masterworks from each period. SPRING. [3] Staff. (Offered alternate years; offered 2000/2001)

147. American Music. A history of music in the United States, 1620 to the present. Distinctly American musical traditions such as shape-notes, minstrelsy, jazz, twentieth-century syntheses. Recommended: 140 or 141, or music-reading skills sufficient to follow a score. FALL, SPRING. [3] Cockrell, Simonett.

148. Survey of Jazz. A survey of jazz history, with particular attention to the major composers, "Jelly Roll" Morton, Duke Ellington, and Thelonius Monk, who gave the music synthesis and form; and to its major innovative soloists, Louis Armstrong, Charlie Parker, and Ornette Coleman, who renewed its musical language. FALL, SPRING. [3] Barz.

149. American Popular Music. Historical study of ways the culture of a nation is reflected and sometimes shaped by the chosen musics of the groups comprising the American "salad bowl." Topics include audience reception; production and consumption; multiculturalism; and meaning. FALL, SPRING. [3] Lowe.

150. Music in Latin America and the Caribbean. An introduction to a wide variety of musical genres and traditions in Latin America and the Caribbean. Indigenous, folk, popular, and art music forms and their social function, meaning, historical development, cultural blending, and cross-hybridization. SPRING. [3] Simonett.

160. World Music. World music as a cultural product; selected musics of Africa, Native America, India, Indonesia, and African America. Topics include music and religion, popular music, field work methodology, and gender issues. FALL. [3] Barz.

170. Asian Musical Cultures. A survey of selected classical, folk, ritual/devotional, and popular musics of India, Indonesia, Japan, and China. Historical, social, and cultural contexts and extensive listening. Recommended: 160. [3] Staff. (Offered alternate years; offered 2001/2002)

171. African Music. A survey of selected traditional and popular music of Africa. Historical, social, and cultural contexts; listening; some performances in class. SPRING. [3] Barz.

183. Music, the Arts, and Ideas. The changing historical relationships among music, literature, fine arts, and philosophy. Musical developments as responses to social, political, and economic circumstances. FALL, SPRING. [3] Link.

200. Women and Music (Formerly 186). An investigation of the roles women have played in the development of Western music—performance, composition, patronage, education—and the social and economic factors that have influenced their position. Recommended:

140 or 141 or familiarity with the style periods of classical Western music. SPRING. [3] Cyrus, Lowe. (Offered alternate years: offered 2000/2001)

218. Words and Music. An investigation of literature that has inspired musical settings and of the musical settings themselves. Emphasis on literary and musical analysis and interpretation. No musical training assumed. SPRING. [3] Michael Rose and Mark Jarman, Professor of English. (Offered alternate years)

242. Music of the Middle Ages and Renaissance. A survey of composers and works from ca. 900 to 1600, emphasizing performance practice, style characteristics, and evolution of form. Use of research tools and techniques. Prerequisite: 140 or 141. FALL, SPRING. [3] Cyrus, Lowe.

243. Music of the Baroque and Classic Eras. A survey of composers and works of the Baroque and Classical periods, emphasizing performance practice, style characteristics, and evolution of form. Introduction to research tools and methods. Prerequisite: 242. FALL, SPRING. [3] Cockrell, Lowe.

244. Music of the Romantic and Modern Eras. A survey of composers and works from 1800 to the present, emphasizing performance practice, style characteristics, and evolution of form. Development of research and writing skills. Prerequisite: 140 or 141. FALL, SPRING. [3] Cockrell, Cyrus, Link.

247. Opera. Opera as drama approached primarily through the libretto and its sources, with attention to musical styles, socio-economic conditions, and dance. Major works studied through readings, video and live performance. Prerequisite: 140 or 141. FALL. [3] Shay. (Offered alternate years; offered 2000/2001)

249. Historical Performance Practices. Methods, materials, and issues involved in the performance of music prior to 1800. Ornamentation, improvisation, vocal and instrumental tone color and technique, access to repertory and performing editions. Practical application of concepts. Prerequisite: 140 or 141. [3] (Not currently offered)

264. Exploring the Film Soundtrack. Relationships among soundtrack, image, and narrative in film. The complex of music, sound, and dialog in a variety of American films, from silents to Hollywood blockbusters and cartoons. Topics include diegesis, temporality, continuity, and musical style. Discussion, video, and film research, reading, and listening. No musical background required. FALL, SPRING. [3] Link.

289. Independent Study. Development and execution of a program of study in musicology or ethnomusicology under the direction of a member of the department. (See Academic Regulations section.) [Variable credit: 1–3 hours each semester] Musicology faculty.

294. Selected Topics in Music History. Selected methodological approaches focused on a particular topic each semester, as announced in the *Schedule of Courses*. Offerings include “Music of the South,” “Haydn and Mozart,” “Afro-Beat: Critical Foundations and Contemporary Developments,” “Beethoven and Schubert,” “Charles Ives,” and “Blackface Minstrelsy.” Prerequisite courses announced in the *Schedule of Courses*. May be repeated for credit when topics vary. [3] Musicology faculty.

298. Senior Thesis. Completion of an extended paper based in musicological or ethnomusicological research under the supervision of a faculty sponsor. Progress monitored via tutorials. Open only to seniors. Prerequisite: MUSL 242–244. [Variable credit, 1–3 hours each semester; may be repeated once] Musicology faculty.

299a–299b. Senior Honors Thesis. Independent research on a musicological or ethnomusicological topic, culminating in a written thesis submitted to the faculty. Progress monitored via tutorials. Students completing this course with distinction, including a thesis and

an oral defense, will earn honors in music literature and history. Open only to students in the departmental honors program. Prerequisite: departmental approval of formal prospectus. [3-3] Musicology faculty.

Teacher Education

101. Introduction to Woodwinds. Development of performance skills and teaching methods for flute, clarinet, oboe, bassoon, and saxophone. Includes teaching techniques and problems peculiar to woodwind instruments, care and minor repairs, and instructional materials. SPRING. [1] F. Kirchner.

102. Introduction to Brass. Development of performance skills and teaching methods for trumpet, french horn, trombone, euphonium, and tuba. Includes teaching techniques and problems peculiar to brass instruments, care and minor repairs, and instructional materials. FALL. [1] Jones

103. Introduction to Strings. Development of performance skills and teaching methods for violin, viola, cello, and double bass. Includes teaching techniques and problems peculiar to string instruments, care and minor repairs, and instructional materials. [1] Staff. (Offered 2001/2002)

104. Introduction to Percussion. Development of performance skills and teaching methods for snare drum, timpani, mallet instruments, and other percussion instruments. Includes teaching techniques and problems peculiar to all percussion instruments, care and minor repairs, and instructional materials. [1] Wiggins. (Offered 2001/2002)

105. Introduction to Classroom Instruments. Development of performance skills and teaching methods for instruments such as recorder, Orff, classroom percussion, and others. Includes methods and materials for elementary general music, emphasizing development of children's ability to sing and play classroom instruments. SPRING. [1] Hartley. (Offered 2001/2002)

250abcd. Practicum in Music Teaching. Observation, participation, and supervised music teaching in a variety of school, grade level, and instructional music settings, designed to integrate and apply musical knowledge and teaching skills developed within the degree program. Weekly seminar included. SPRING. [1] Sagen.

300. Philosophical Foundations and Contemporary Issues in Music Teaching. A comprehensive study of historical trends and philosophies relevant to music teaching. Readings and discussions of the practical application of educational research studies to music teaching. SUMMER. [3] Staff. (Offered 2002)

310. Graduate Practicum in Music Teaching. Observation, participation, and supervised music teaching in a variety of school, grade level, and instructional music settings, designed to integrate and apply musical knowledge and teaching skills developed within the undergraduate degree program. Bi-weekly seminar included. FALL. [1] Staff. (Offered 2002/2003)

320. Methods and Materials in Instrumental Music, PreK through 12. Techniques and materials for teaching instrumental music, PreK through 12. Emphasizes instrumental organization, administration, pedagogical practices, and developing school instrumental music programs. FALL. [6] Staff. (Offered 2002/2003)

330. Methods and Materials in Vocal/General Music, PreK through 12. Techniques and materials for teaching vocal music in junior and senior high school and general music, PreK through 12. Emphasizes vocal music organization, administration, pedagogical practices, and the study of general music activities for PreK and elementary school, such as Orff, Kodaly, and Dalcroze. FALL. [6] Staff. (Offered 2002/2003)

350. Student Teaching. Observation and teaching experience on a full-time basis. Includes two placements at two different age levels. Prerequisite: Admission to student teaching. Co-requisite: MUST 355/ED 3005. SPRING. [6] Staff. (Offered 2002/2003)

355. Student Teaching Seminar. Study and discussion of experiences emerging from student teaching, particularly planning school programs and assuming full responsibility in the classroom. Co-requisite: MUST 350/ED 3000. SPRING. [1] Staff. (Offered 2002/2003)

Other Music Courses

Non-Credit Requirements

108. Recital Attendance. Weekly recitals in solo and chamber music settings, presented by students enrolled for performance instruction, and ten additional faculty/student recitals and concerts. Required of all music degree (B.Mus.) students. (See Academic Regulations section above.) Offered on a pass/fail basis. [0] Hime.

109a. Flute Performance Class. Weekly observation and participation. Required of all flute majors, performance and musical arts. Offered on a pass/fail basis. [0] J. Kirchner.

109b. Violin Performance Class. Weekly observation and participation. Required of all violin majors, performance and musical arts. Offered on a pass/fail basis. [0] Heard and Teal.

109c. Cello Performance Class. Weekly observation and participation. Required of all cello majors, performance and musical arts. Offered on a pass/fail basis. [0] Wang.

109d. Piano Performance Class. Weekly observation and participation. Required of all piano majors, performance and musical arts. Offered on a pass/fail basis. [0] Nies.

109e. Guitar Performance Class. Weekly observation and participation. Required of all guitar majors, performance and musical arts. Offered on a pass/fail basis. [0] Johns and Phillips.

109f. Vocal Performance Class. Weekly observation and participation. Required of all voice majors, performance and musical arts. Offered on a pass/fail basis. [0] Voice faculty.

109g. Viola Performance Class. Weekly observation and participation. Required of all viola majors, performance and musical arts. Offered on a pass/fail basis. [0] Kochanowski and Plummer.

109L. Bass Performance Class. Weekly observation and participation. Required of all bass majors, performance and musical arts. Offered on a pass/fail basis. [0] Meyer and Wanner.

110a. High Brass Performance Class. Weekly observation and participation. Required of all trumpet and horn majors, performance and musical arts. Offered on a pass/fail basis. [0] Cox.

110b. Low Brass Performance Class. Weekly observation and participation. Required of all trombone and tuba majors, performance and musical arts. Offered on a pass/fail basis. [0] Borden.

110c. Fiddle Performance Class. Weekly observation and participation. Required of all private students. Offered on a pass/fail basis. [0] Plohman.

110d. Oboe Performance Class. Weekly observation and participation. Required of all oboe majors, performance and musical arts. Offered on a pass/fail basis. [0] Taylor.

110e. Bassoon Performance Class. Weekly observation and participation. Required of all bassoon majors, performance and musical arts. Offered on a pass/fail basis. [0] Estill.

110f. Clarinet Performance Class. Weekly observation and participation. Required of all clarinet majors, performance and musical arts. Offered on a pass/fail basis. [0] Lee.

111c. Violin Etude Class. Weekly observation and participation. Required of all students of Heard. Offered on a pass/fail basis. [0] Heard.

111d. Violin Scale and Etude Class. Weekly observation and participation. Required of all students of Teal. Offered on a pass/fail basis. [0] Teal.

Specialty Courses

100. The Business of Music. A general survey of music in the world of commerce. Systems of the contemporary music business, with special emphasis on the recording industry. Music business professionals as guest lecturers. FALL, SPRING. [3] Foglesong.

101. Arts Management. A history of arts institutions in the United States. The production of exhibitions of the visual arts, drama, dance, opera, musical theatre, and symphonic concerts. Issues in contemporary arts management. Readings, live productions, guest speakers, and visits to local nonprofit arts institutions. SPRING. [3] Needham. (Not currently offered)

103. Musical Theatre in America: A Cultural History. From eighteenth century melodrama and vaudeville through the musicals of the 1940s and 1950s to the contemporary emphasis on integration of spectacle, dance, and other theatrical arts. Readings, live productions, guest lecturers, and film. SPRING. [3] Needham. (Offered alternate years; offered 2000/2001)

104. Lyric Theatre Workshop. Introduction to the various elements of the lyric theatre experience: acting, movement, improvisation, use of the voice, stage combat, and scene study. Presentation of scenes from the operatic and/or American musical theatre repertoire. Open to all Vanderbilt students by audition. FALL. [1] Shay.

105a–105b. Traditional Fiddling. Historical and performance-based study of the fiddle's involvement with musical Americana. 105a: The older traditional styles of American music, including old-time, bluegrass, Texas (contest-style), and western swing fiddling. 105b: Other styles of fiddle music, including Celtic, old jazz, country, and other styles of world music. Prerequisite: basic violin skills. [1–1] Plohman.

114. Fingerboard Harmony. Advanced guitar skills: modal positions, modal patterns, score reading, arpeggios, transposition, and chord progressions. Prerequisite: MUSP 104B or permission of instructor. FALL, SPRING. Available to Arts and Science students for professional credit. [1] Phillips

125. Acoustics and Psychoacoustics of Music. The physics of sound as produced by common types of instruments (including voice), based on vibrations of strings, tubes, and plates. Basic aspects of sound perception and cognition: what sound is, how it is produced, and how it is perceived. MAY [2] Borden.

127. Intonation, Keyboards, and Temperament. Designed to explain the harmonic series in detail, problems of intonation, and the development of today's system of tuning. FALL,

SPRING. [1] Foote. (Not currently offered)

131. Elements of Jazz Improvisation. Introduction to the techniques of jazz improvisation. Development of basic performing techniques in various styles. Prerequisite: MUSC 131a. FALL, SPRING. [1] Adair.

132. Introduction to Jazz Improvisation for Strings. Open to all violin, viola, and cello students, the course is designed to provide an understanding of the basic rules of jazz improvisation and an appreciation of the history of stringed instruments in jazz. Includes associating scales with chords, improvising with chord notes as target notes, incorporating space and rhythms and simple tune analysis. [1] Norgaard.

151. Woodwind Seminar. Fundamentals of woodwind playing with emphasis on tone, intonation, practice and rehearsal techniques, musicianship, and the psychology of performance. Includes in-class performance and critique. Required of all woodwind performance majors. FALL [1] Estill.

152. Brass Seminar. Fundamentals of brass playing; an overview of basic techniques. An in-depth study of non-traditional notation, performance practice, and ensemble rehearsal techniques. Required of all brass performance majors. Open only to music majors. SPRING. [2] Borden.

153. Percussion Seminar. Overview of percussion in Western and non-Western cultures from pre-history to present. Emphasis on European/American orchestral practices. Representative works for study chosen from symphony, opera, oratorio, and other orchestral/choral sources. FALL. [1] Wiggins.

159. Diction for Singers: English and Italian. An introduction to the International Phonetic Alphabet as applied to lyric English and Italian diction. FALL. [1] Jarman.

159c. Diction for Singers: German. High German diction, using the International Phonetic Alphabet. Prerequisite: 159 or permission of the instructor. Available to Arts and Science students for professional credit. SPRING. [1] Ahner.

159d. Diction for Singers: French. French stage diction, using the International Phonetic Alphabet. Prerequisite: 159 or permission of the instructor. Available to Arts and Science students for professional credit. FALL. [1] Ahner.

160. Stage Movement for Musicians. General introduction to stage movement and performance art. Techniques of pantomime, progressive relaxation and movement improvisation. Postural alignment and corrective exercise therapy as needed. Creative exploration of the movement dimensions of multi-media performance art events through class participation. No dance experience necessary. [2] Needham. (Not currently offered)

162. The Alexander Technique. The Alexander Technique addresses the physiological factors that may lead to injury or impairment. Principles of the technique applied to musical performance. Offered on a pass/fail basis only. SPRING. [1] Richmond.

163. The Performer and the Body. An accurate kinesthetic sense of the structure of the body through body mapping and the techniques of F. M. Alexander. Hands-on teaching in a small group setting with attention to individuals and their particular performance modes, i.e., public speaking, singing, dancing, acting, playing an instrument. Offered on a pass/fail basis. FALL, SPRING. [1] Ahner.

165. Tai Chi for Musicians. Principles of Tai Chi applied to musical performance. The practice and understanding of anatomical movement, with emphasis on prevention of injury. Offered on a pass/fail basis. FALL. [1] Phillips.

170. Breathing: Respiratory Function for Woodwind and Brass Performers. The use of the respiratory system for music performance. Physiology, the psychology of training, and air pathway diseases. Individual instruction applied to the performer's instrument. MAY [1] Borden.

Orchestral Repertoire

251. Woodwind Orchestral Repertoire. Exploration of the standard orchestral repertoire with emphasis on performance practice. Performance of selected excerpts, coached and conducted. Not recommended for freshmen. SPRING. [1] Estill.

251e. Woodwind Orchestral Repertoire (Elective). Continuation of 251. May be repeated for credit. SPRING. [1] Estill.

252. Brass Orchestral Repertoire. Exploration of the standard orchestral repertoire with emphasis on the late Romantic period. Performance of selected excerpts, coached and conducted. FALL. [1] Borden.

252e. Brass Orchestral Repertoire (Elective). Continuation of 252. May be repeated for credit. FALL. [1] Borden.

253a. Orchestral Repertoire for Percussion. Exploration of the standard orchestral repertoire for percussion instruments, exclusive of timpani, with emphasis on score analysis, instrument selection, and performance techniques. Selected excerpts coached and conducted. SPRING. [1] Wiggins. (Offered alternate years; offered 2000/2001)

253b. Orchestral Repertoire for Timpani. Exploration of the standard orchestral repertoire for timpani. Emphasis on score analysis, editing, stick selection, and performance practice. Selected excerpts coached and conducted. SPRING. [1] Wiggins. (Offered alternate years; offered 2001/2002)

254a–254b. String Orchestral Repertoire I and II. Analysis and coaching of the standard orchestral repertoire, including opera and ballet, with emphasis on style and technical problems. Selected excerpts in like instrument groups (violin, viola, cello, bass, harp). [1–1] Vanosdale, Plummer, Wanner, Mansell, and Shaffer..

254c. Violin Orchestral Repertoire (Elective). Continuation of 254b. May be repeated for credit. [1] Vanosdale.

254d. Viola Orchestral Repertoire (Elective). Continuation of 254b. May be repeated for credit. [1] Plummer.

254e. Cello Orchestral Repertoire (Elective). Continuation of 254b. May be repeated for credit. [1] Mansell.

Instrument Literature

256. Piano Literature. A survey of works for piano from the seventeenth through the twentieth centuries, within the context of historical perspective, stylistic awareness, and pianism. Designed primarily for piano majors. SPRING. [2] Nies. (Offered alternate years; offered 2000/2001)

257. Organ Literature. Survey of organ literature from 1500 to the present. Reading and listening, with special attention to organ registration pertaining to nationality and time period. FALL. [2] Carl Smith. (Not currently offered)

258. Guitar Literature. Survey of literature for the classical guitar from the sixteenth century to the twentieth century. Various systems of notation including lute and vihuela are

explored. FALL. [2] Johns. (Offered alternate years; offered 2001/2002)

259. Vocal Literature. Survey of literature for solo voice from the seventeenth century to the present, with focus on traditional art songs of the great masters of the genre. Prerequisite: MUSL 141, MUSC 221, two years of voice study. FALL. [2] Retzlaff. (Offered alternate years; offered 2001/2002)

Conducting

261. Conducting. An introductory course of study stressing the fundamentals of movement and gesture as they relate to style, articulation, phrasing, tempo, cueing, etc. Score reading at the piano. Prerequisite: MUSC 124e, 132b or 133b, 221. Available to Arts and Science students for professional credit. FALL, SPRING, MAY. [2] Fountain.

262. Instrumental Conducting. Expansion of basic skills to include longer and more complex musical structures; expanded ability in analysis, memorization, and interpretation; significant independent preparation. Prerequisite: 261 and consent of instructor. [2] SPRING. Fountain.

263. Choral Conducting. Choral conducting and rehearsal techniques, score reading and analysis, methods, and materials of choral music. Prerequisite: 261 and consent of instructor. SPRING. [2] Childs.

Pedagogy

161. Music and Cognition. Theories and research about the cognition of music, appreciation, and performance. Selected musical topics include timbre, consonance, dissonance, tuning, melody, rhythm, scales, modes, chords, and composition. Concepts and research from the psychological sciences emphasize sensory mechanisms, perceptual discriminations, pattern recognition, categorization, transfer of learning, and motor coordination. Prerequisite: one course in music or psychology. FALL, SPRING. [3] Borden and John Rieser, Professor of Psychology, Peabody College.

261. Music Cognition Research Seminar. Continuation of 161, emphasizing study and discussion of recent research in music cognition. Development of formal research proposal. Prerequisite: MUSO 161. SPRING. [2] Borden, Rieser.

266. Piano Pedagogy. Principles and procedures of teaching piano. Individual and group instruction techniques observed and discussed. Practicum with private students. Designed for piano majors; others admitted with consent of instructor. FALL. [2] Krieger. (Offered alternate years; offered 2000/2001)

267. Organ Pedagogy. Review of organ methods and resource materials for piano and/or organ that describe the development of technique. Practicum with a private student. FALL. [2] Jensen. (Not currently offered)

268. Guitar Pedagogy. Principles and procedures of teaching classical guitar. Instructional methods and their applications with different age levels. Attention given to individual and group instruction. SPRING. [2] Johns. (Offered alternate years; offered 2001/2002)

269. Vocal Pedagogy. Principles and procedures of teaching voice. Psychological and physiological approaches. Practicum with private students. Prerequisite: two years of voice study. FALL. [2] Retzlaff. (Offered alternate years; offered 2000/2001)

271. Pedagogy Practicum. Principles and procedures of private teaching. Reading and

research under the direction of a faculty sponsor, consistent with requirements for Independent Study. Practicum with private students. Consent of the faculty sponsor is required. [Variable credit: 1–2 hours each semester] Staff.

281. Pedagogy Internship. Focused experience in the teaching of performance under the direction of a faculty sponsor in that performance area (consent required). Involves a specific program of regular consultation between student and supervising teacher. Open only to students seeking concentration in pedagogy. Prerequisite: MUSO 256, 257, 258, 259, or 289 (in field) and 266, 267, 268, or 269 (in field). [Variable credit: 1–3 hours each semester] Staff.

Independent Study

289. Independent Study. Development of a project or a program of reading under the direction of a faculty sponsor. Consent of the faculty sponsor is required. (See Academic Regulations section.) [Variable credit: 1–3 hours each semester] Staff.

Senior Seminar

297. Senior Seminar. Comprehensive review and correlation of the materials of music history, literature, and theory. Prerequisite: MUSC 221, MUSL 244. FALL. [1] Staff. (Not currently offered)

B

Group Performance Instruction: Non-Major

Group instruction is designed for beginning students with emphasis on basic technique, rhythm, tone, and musical interpretation. Groups are limited to six students.

Registration. New students must interview with the appropriate faculty member before finalizing registration. Instructions are given in the computer registration system.

Professional Credit. Students in the College of Arts and Science earn professional credit.

Fees. Music fees are in addition to tuition charges and are not refundable after the change period. Fees include free admission to all Blair Series Concerts; a complimentary ticket must be obtained *in advance* with a Blair identification card. The cost for group instruction is \$365 per semester for one 60-minute lesson weekly.

Fees are set annually by the Board of Trust and are subject to review and change without further notice.

102a–102b. Introduction to Piano I and II. A total-musicianship approach to the piano. Repertoire, technique, and sight reading are studied. Also includes the study of transposition, harmonization, and improvisation. One 60-minute group lesson weekly. FALL, SPRING. [1–1] Walker, Wade.

103a–103b. Introduction to Voice I and II. Fundamentals of vocal technique, including breathing, posture, and vowel production. Also includes English and Italian diction. One 60-

minute group lesson weekly. [1–1] Voice faculty.

104a–104b. Introduction to Guitar I and II. A foundation in basic guitar technique that will prepare students for future studies in classical, jazz, or popular styles of guitar. Emphasis on chordal accompaniment, development of reading skills, improvisational techniques with melodies and chords. One 60-minute group lesson weekly. [1–1] Phillips.

105a–105b. Introduction to Percussion I and II. Basic percussion techniques with emphasis on rolls, embellishments, sticking combinations, and their applications for concert and popular musical styles. Prerequisite: previous musical experience and an understanding of notation. One 60-minute group lesson weekly. [1–1] Wiggins.

106a–106b. Introduction to Recorder I and II. Fundamentals of recorder playing using soprano, alto, tenor, and bass recorders. Instruction also available on krummhorn and cornetto. Ensemble literature from the Renaissance, Baroque, and Classic periods. One 60-minute group lesson weekly. [1–1] Rogers.

107a–107b. Introduction to Fiddle I and II. Designed for those with no experience in fiddle playing. Technical, stylistic, and historical elements involved in fiddling, as well as basic notation and idiomatic techniques. [1–1] Plohman.

108a–108b. Introduction to Mandolin I and II. Designed for those with no experience in playing mandolin. Technical, stylistic, and historical elements involved in playing mandolin, as well as basic notation and idiomatic techniques. 108a will focus on traditional American dance tunes, vocal songs, and waltzes; 108b will focus on more advanced American repertoire, Celtic tunes, swing, and improvisation. [1–1] Baldassari.

Individual Performance Instruction: Musical Arts and Elective

Individual instruction is focused on the art and practice of an instrument or voice, with emphasis on tone quality, technique, rhythm, interpretation, and literature.

Registration. New students must interview with the appropriate faculty member before finalizing registration. Instructions are given in the computer registration system.

Credit. University students enrolled in individual instruction may earn 1 or 2 credit hours depending on lesson length and practice commitment. Lessons 30 minutes in length require 5 hours minimum practice per week, generating 1 credit hour. Lessons 45 minutes in length earn 1 or 2 credit hours, with 5 or 10 hours weekly practice respectively. Lessons 60 minutes in length require 10 hours minimum practice per week, generating 2 credit hours. Beginners may not register for more than 1 hour of credit. Students in the College of Arts and Science earn professional credit.

Fees. Music fees are in addition to tuition charges and are not refundable after the change period. Students receiving need-based financial aid may request that music fees be considered in their financial aid package. Fees are waived for required instruction. Fees include free admission to all Blair Series Concerts; a complimentary ticket must be obtained *in advance* by presenting a Blair identification card. For courses numbered MUSP 171–196 and

171L–190L, fees per semester are as follows:

One 30-minute lesson weekly	\$475
One 45-minute lesson weekly	\$680
One 60-minute lesson weekly	\$860
Practice room (optional)	\$165

Fees are set annually by the Board of Trust and are subject to review and change without further notice.

171-195. Individual Instruction. Non-majors usually register for a course number without the “L,” as do B.Mus. majors taking elective credit (a second instrument) and composition/theory majors enrolled in any performance instruction. The “L” suffix indicates achievement of a moderately advanced level of performance; consent of the instructor is required. The Blair registrar can provide repertoire information and approval forms. “L” level registration is usually reserved for students taking music as a second major (a total of 4 hours required), students taking a minor in music performance (12 hours required), B.Mus. students taking a minor instrument (8 hours required), and Blair musical arts majors in their primary performance area. The 200-level “L” courses are open only to Blair musical arts juniors and seniors in their primary performance area. [Variable credit: 1–2 hours each semester]

171, 171L, 271L. Flute. J. Kirchner and Rogers.

172, 172L, 272L. Oboe. Menking and Taylor.

173, 173L, 273L. Clarinet. C. Lee and Mitchell.

174, 174L, 274L. Saxophone. F. Kirchner.

175, 175L, 275L. Bassoon. Estill.

176, 176L, 276L. Horn. Norton and Worland.

177, 177L, 277L. Trumpet. Cox and Suska.

178, 178L, 278L. Trombone. Borden.

179, 179L, 279L. Tuba. Davis and Long.

180, 180L, 280L. Percussion. Wiggins.

181, 181L, 281L. Harp. Shaffer.

182, 182L, 282L. Violin. Baker, Greer, Heard, Olson, Teal, and Vanosdale.

183, 183L, 283L. Viola. Kochanowski, Lackey, and Plummer.

184, 184L, 284L. Cello. Mansell, Wang.

185, 185L, 285L. Double Bass. Meyer and Wanner.

186, 186L, 286L. Piano. Adair, Bartles, Cormier, Dorfman, Gotthardt, Green, Hirono, Krieger, Nies, Reagan, Melissa Rose, Roland Schneller, Wade, and Walker.

187, 187L, 287L. Organ. Students must have had at least two years of piano study. Fyfe and Jensen.

188, 188L, 288L. Guitar. Johns and Phillips.

189, 189L, 289L. Voice. Ahner, Jarman, Prentice, Retzlaff, and Shay.

190, 190L, 290L. Euphonium. Davis.

- 191. Viola da Gamba.** Williams.
192. Fiddle. Plohman.
193. Harpsichord. Brecht.
194. Dulcimer. Schnauffer and Seifert.
195. Mandolin. Baldassari.
196. Recorder. Rogers.

Individual Instruction: B.Mus. Degree

Performance Majors. Freshman and sophomores seeking the B. Mus. in performance register for 100-level instruction. Freshmen register for a in fall, b in spring. Sophomores register for c in fall, d in spring. Juniors and seniors register for 200-level instruction; juniors register for a in fall, b in spring, and seniors register for c in fall, d in spring. Performance majors who wish to take a second instrument may enroll in MUSP 171–196 (with no letter suffix) for 1 or 2 hours elective credit.

Fees. Fees are waived for required performance instruction for B.Mus. students. For elective instruction, there is an additional fee unless this instruction is recommended by the adviser and fee waiver is approved by the associate dean.

Musical Arts Majors. Blair musical arts majors register for “L” level courses in the primary instrument (or voice), 100 level for freshmen and sophomores, 200 level for juniors and seniors. (See Individual Performance Instruction: Musical Arts and Elective section.)

Composition/ Theory Majors. Blair composition/theory majors register for performance courses with no letter suffix, or for “L” level courses if their proficiency warrants it and the instructor has granted consent. (See Individual Performance Instruction: Musical Arts and Elective section.)

Individual Instruction for Performance Majors Only

- 171abcd, 271abcd. Flute.** [4] J. Kirchner.
172abcd, 272abcd. Oboe. [4] Taylor.
173abcd, 273abcd. Clarinet. [4] C. Lee.
174abcd, 274abcd. Saxophone. [4] F. Kirchner.
175abcd, 275abcd. Bassoon. [4] Estill.
176abcd, 276abcd. Horn. [4] Norton and Worland.
177abcd, 277abcd. Trumpet. [4] Cox.
178abcd, 278abcd. Trombone. [4] Borden.
179abcd, 279abcd. Tuba. [4] Davis and Long.

180abcd, 280abcd. Percussion. [4] Wiggins.

181abcd, 281abcd. Harp. [4] Shaffer.

182abcd, 282abcd, 183abcd, 283abcd, 184abcd, 284abcd, 185abcd, 285abcd Requirements for 182d, 183d, 184d, and 185d include an upper divisional hearing in the sophomore year to determine continuance in the performance degree program and permit subsequent enrollment in 282a, 283a, 284a, and 285a. Students are required to perform an approximately twenty-minute program for the string faculty. Repertoire should include solo Bach, and selections must represent at least three style periods. Memorization is required as is appropriate to the repertoire. Sonatas need not be memorized. Failure to pass this hearing demonstrates a lack of the requisite skills to graduate in string performance at Blair, necessitating transfer to another degree program. A student may petition the string faculty for another hearing, with entirely different repertoire, to take place before the end of the first semester of the junior year.

182abcd, 282abcd. Violin. [4] Greer, Heard, Teal, and Vanosdale.

183abcd, 283abcd. Viola. [4] Kochanowski and Plummer.

184abcd, 284abcd. Cello. [4] Wang.

185abcd, 285abcd. Double Bass. [4] Meyer and Wanner.

186abcd, 286abcd. Piano. Requirements for 186c include an upper divisional hearing in the sophomore year to determine continuance in the performance degree program and permit subsequent enrollment in 286a. Students are required to perform for the Upper Division Hearing Committee a thirty-minute memorized program of solo piano literature, representing at least three style periods. The committee consists of the student's teacher, at least two additional piano faculty members, and at least two faculty members from other music areas. Failure to pass this hearing demonstrates a lack of the requisite skills to graduate in piano performance at Blair, necessitating transfer to another degree program. A student may petition the committee for another hearing, with entirely different repertoire, to take place before the end of the sophomore year. [4] Dorfman, Krieger, and Nies.

187abcd, 287abcd. Organ. [4] Fyfe and Jensen.

188abcd, 288abcd. Guitar. [4] Johns.

189abcd, 289abcd. Voice. Requirements for 189d include an upper divisional hearing in the second semester of the sophomore year to determine continuance in the performance degree program and permit subsequent enrollment in 289a. Students are required to perform for the voice faculty a twenty-minute memorized program, with a minimum of five songs of contrasting periods and styles, using three languages (Italian, English, and either French or German). Failure to pass this hearing demonstrates a lack of the requisite skills to graduate in vocal performance at Blair, necessitating transfer to another degree program. A student may petition the voice faculty for another hearing, with entirely different repertoire, to take place before the end of the first semester of the junior year. [4] Ahner, Jarman, Prentice, Retzlaff, and Shay.

190abcd, 290abcd. Euphonium. [4] Davis.

Recitals

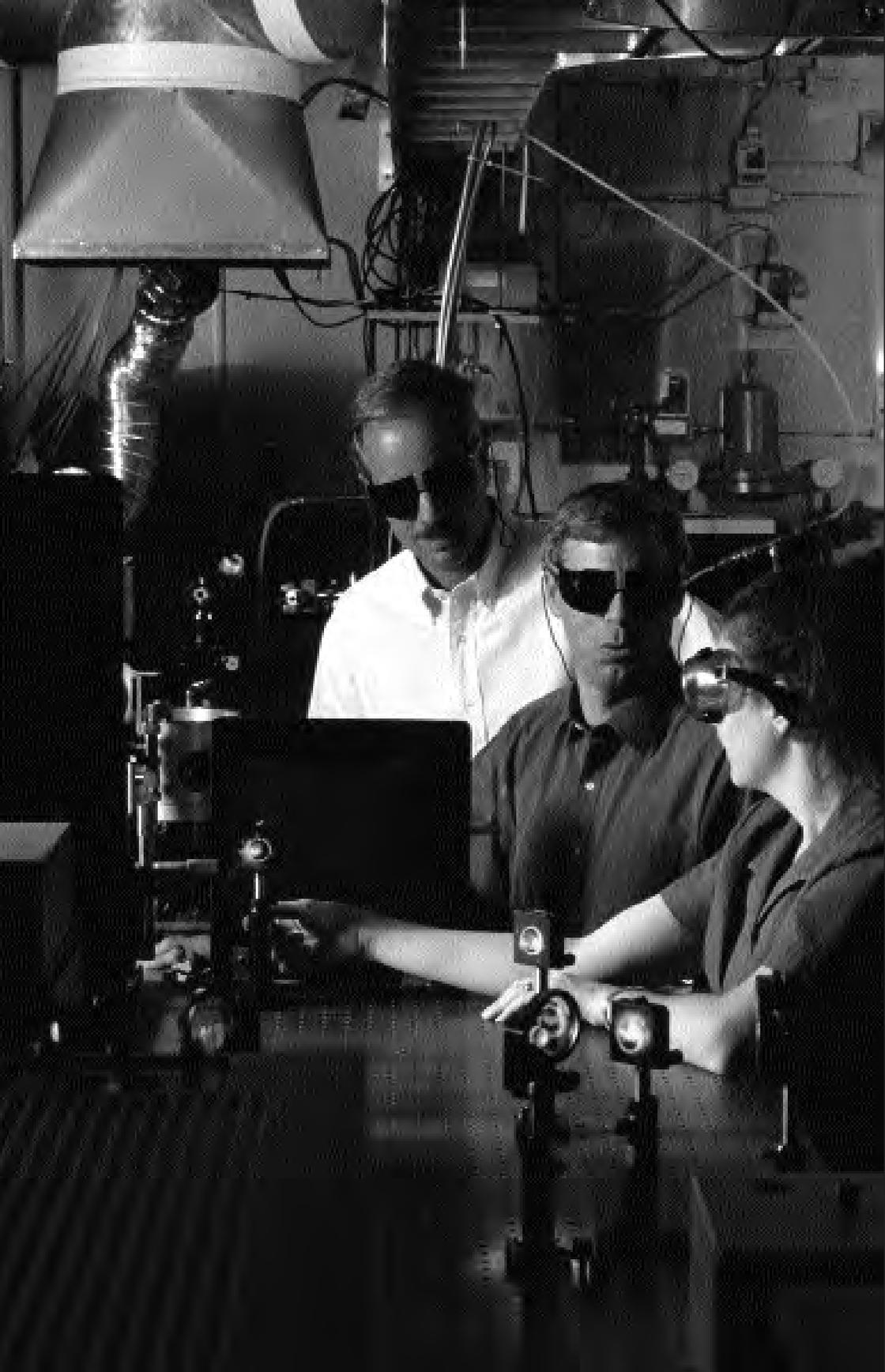
295. Junior Recital. Students are encouraged to prepare a joint recital, shared with another



School of Engineering

E

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Engineering Education in a University Setting

VANDERBILT University School of Engineering is the largest and oldest private engineering school in the South. Classes offering engineering instruction began in 1879, and seven years later Engineering was made a separate department with its own dean. The School's program emphasizes the relationship of the engineering profession to society and prepares engineers to be socially aware as well as technically competent.

The mission of the School of Engineering is threefold: to prepare undergraduate and graduate students for roles that contribute to society; to conduct research to advance the state of knowledge and technology and to disseminate these advances through archival publications, conference publications, and technology transfer; and to provide professional services to the community.

The school strives to meet the undergraduate education portion of its mission by offering degree programs in fields of engineering relevant to the needs of society. An objective of these programs is to provide a technical education integrated with strong humanities, fine arts, and social sciences subject matter to provide the requisite foundation for life-long learning. The availability of second majors and minors in subject areas in other schools and colleges of the University increases opportunities for engineering students to enhance their education by pursuing studies in the non-technical disciplines. Engineering students take close to 50 percent of their courses outside of the School of Engineering and associate daily with peers from other schools and colleges within the University.

Another objective is to accommodate students who will continue their studies at the graduate level in engineering or in other professional fields, as well as those who intend to enter engineering practice upon graduation. To this end, our programs emphasize mathematics and engineering sciences, yet provide significant exposure to engineering design and hands-on laboratory experiences.

A large fraction of the student body is destined for management positions early in their working careers. To meet these students' needs, the Management of Technology Program offers a well-integrated curriculum, including a minor. In addition, a joint program with the Owen Graduate School of Management is available.

The Bachelor of Engineering degree serves those programs in engineering where professional registration through state boards is desirable or necessary. Typically, about 90 percent of the students are enrolled in programs that are accredited by the Engineering Accreditation Commission of the Accreditation

Board for Engineering and Technology (ABET). To publicize professional registration and to serve the needs of engineers in the community who desire registration, the school sponsors a review course for the Fundamentals of Engineering examination.

The Bachelor of Science degree addresses the needs of those students seeking specialized programs not served by conventional engineering degree programs. The degree provides students with a general scientific and engineering background while allowing individual curricular desires to be addressed. For example, students who want to use a degree from the School of Engineering to enter the primary or secondary education fields may include the necessary courses in education from the Peabody School of Education and Human Development in their engineering degree program.

Students at all levels have the opportunity to work with faculty in the generation of new knowledge. Those planning for graduate studies and research may participate in individual topics and research courses to fulfill that desire. Engineering students also participate in the University's Summer Research Program for Undergraduates.

Facilities

Administrative offices of the school are located on the third floor of the Science and Engineering Building in the Stevenson Center. The Biomedical Engineering Department occupies the eighth and ninth floors of the Science and Engineering Building. Many classrooms and laboratories are housed in Jacobs Hall, which was erected in 1950 and enlarged in 1958, 1967, and 1969. The Olin Hall of Engineering, erected in 1974, houses chemical engineering, mechanical engineering, and materials science. The third floor of the Science and Engineering building in the Stevenson Center for the Natural Sciences contains several School of Engineering classrooms.

In all its engineering programs, Vanderbilt recognizes the valid place of experimental and research laboratories in the learning experience. Laboratories are planned to provide the strongest personal contact between students and faculty members consistent with enrollment.

Well-equipped undergraduate laboratories are maintained by the Departments of Chemistry and Physics in the College of Arts and Science, which offers mathematics and basic science courses required of all engineering students. Graduate and undergraduate divisions of these departments maintain teaching and research facilities in the Stevenson Center for the Natural Sciences, as does the Geology Department. Another supporting department, Biology, is housed in Buttrick Hall. Most classes in humanities and the social sciences are conducted in Calhoun, Furman, Garland, and Wilson halls.

Accreditation

All programs leading to the B.E. degree are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and

Technology (ABET). The B.S. program in computer science is accredited by the Computing Sciences Accreditation Board (CSAB).

Employment of Graduates

Of the recent Vanderbilt graduates with baccalaureate degrees in engineering, about 60 percent entered directly into professional practice. Forty percent continued with graduate education or chose military service careers. Others pursued diverse careers or other interests. Additional information regarding the employment of engineering graduates is available in the Career Center.

Supporting Organizations

Vanderbilt Engineering Council

The Engineering Council is a student organization whose main goal is facilitating communication between administration, faculty, and students in the School of Engineering. Officers of the Engineering Council are elected by the engineering student body, and representatives from the professional societies complete the organization's membership. While the council has no administrative power, it provides students with a voice in the decision-making process in the School of Engineering.

Professional Societies

The leading national engineering societies have chartered branches or student sections at Vanderbilt. These organizations are run locally by students with the help of a faculty adviser. Meetings are devoted to matters of a technical nature, including films, outside speakers, plant trips, and other subjects of interest to the membership.

Student speakers from the Vanderbilt groups compete annually with speakers from other groups in their region in technical paper competitions.

Freshmen and sophomores are cordially invited to attend meetings—and juniors and seniors are urged to join—as they will find the work of the professional societies beneficial in orienting them in their careers.

The student professional societies are:

- American Institute of Chemical Engineers (A.I.Ch.E)
- American Society of Civil Engineers (A.S.C.E.)
- American Society of Mechanical Engineers (A.S.M.E.)
- American Society for Metals (A.S.M.)
- Association for Computing Machinery (A.C.M.)
- Institute of Electrical and Electronics Engineers (I.E.E.E.)
- International Society for Hybrid Microelectronics (I.S.H.M.)

National Society of Black Engineers (N.S.B.E.)
Society of Hispanic Professional Engineers (S.H.P.E.)
Society of Engineering Science (S.E.S.)
Society of Women Engineers (S.W.E.)
Vanderbilt Amateur Radio Club
Vanderbilt Biomedical Engineering Society

Graduating seniors may join the Order of the Engineer, a society that recognizes the commitment of its members to the profession of engineering.



Degree Programs in Engineering

BACHELOR of Engineering degree programs are offered in the areas of biomedical, chemical, civil, computer, electrical, and mechanical engineering. Many of these programs allow considerable flexibility—but students are required to include in their courses of study those bodies of knowledge fundamental to each discipline.

Bachelor of Science degree programs offered in the interdisciplinary engineering disciplines often allow strong concentration in other areas of engineering or in the College of Arts and Science. The B.S. degree is awarded in the areas of computer science and engineering science.

The School offers the Master of Engineering (M.Eng.) degree, with emphasis on engineering design and practice, in most areas of study. The Graduate School, through departments of the School of Engineering, offers the research-oriented Ph.D. degree in eight major fields. Degree programs offered by the School of Engineering are shown below.

Degree Programs

	B.E.	B.S.	M.Eng.	M.S.	Ph.D.
Biomedical Engineering	•		•	•	•
Chemical Engineering	•		•	•	•
Civil Engineering	•		•	•	•
Computer Engineering	•				
Computer Science		•	•	•	•
Electrical Engineering	•		•	•	•
Engineering Science		•			
Environmental Engineering			•	•	•
Management of Technology			•	•	
Materials Science and Engineering			•	•	•
Mechanical Engineering	•		•	•	•

Undergraduate Degrees

Bachelor of Engineering

The Bachelor of Engineering degree is offered in Biomedical, Chemical, Civil, Computer, Electrical, and Mechanical Engineering. The B.E. degree requirements vary from 126 to 128 semester hours. Students seeking double majors will require somewhat more credit hours.

Bachelor of Science

The Bachelor of Science degree is offered in Computer Science and Engineering Science. Computer Science requires 122 semester hours and Engineering Science requires 120 semester hours. These programs have more flexibility in elective choice than the B.E. degree programs.

The Freshman Year

Many courses normally scheduled for the freshman year are common to both the B.E. and B.S. degree programs. While the curriculum for the freshman year is generally the same for all students, there are important variations. For example, some major programs require a full year of introductory chemistry; others do not. Students should become familiar with requirements of those programs in which they have an interest and confer with their adviser at the time of enrollment and throughout the freshman year to work out a program of study that will keep options open as long as possible.

Specimen curricula for the engineering programs are given in the *Courses of Study* chapter. Requirements for the B.E. and B.S. degrees for the various programs vary in the minimum amount of work and specific course requirements in the basic sciences and in specific subject requirements in mathematics.

Included in the freshman year is the course ES 130 (Introduction to Computing in Engineering), which introduces the student to design tools used in all areas of engineering. Students who want to continue with a foreign language they began in high school may delay the technology and society elective scheduled in the first semester.

Some students may qualify for advanced placement or advanced credit in mathematics, science, the humanities and social sciences, or computer science. If advanced credit is awarded, it will not affect the student's Vanderbilt grade point average.

Mathematics

Entering engineering students will be placed in the appropriate level mathematics course by the director of the undergraduate mathematics program for engineers. Students offering one full year or more of high school credit in analytic geometry and calculus may qualify for advanced placement in a regular sequence by scoring well on the Advanced Placement Examination and by petition to the department. Some students may be given advanced placement without credit if it is adjudged by the department that they have completed analytic geometry and calculus courses in high school equivalent to Vanderbilt courses, but have not taken Advanced Placement Examinations. In such cases, the minimum number of hours in mathematics required for the student's chosen engineering major will be reduced accordingly, but the minimum number of hours required for graduation will not be reduced.

Students with high mathematical ability and achievement may apply for enrollment in the honors mathematics sequence. For more information, see the course descriptions under Mathematics in the *Arts and Science* section of this catalog.

Students with inadequate backgrounds in mathematics may be required to take Math 133 (Pre-calculus Mathematics). Taking this course constitutes an additional requirement for graduation.

E

Distribution Requirements

In addition to specified or elective technical courses in the various disciplines, each student's program must include the following distribution:

English Requirement. All students are required to demonstrate competence in oral and written communication. Departmental advisers will assist individuals in selecting appropriate courses. Students taking English 100W earn open elective credit.

Humanities and Social Science Electives. Fifteen or more hours of 100- or 200-level courses, as specified by the program, are to be selected with the consent of the student's adviser from the following list. It is required that 6 or more hours be in each division, and that at least 6 hours be in courses above the introductory level. Economics 100 (Principles of Macroeconomics) is strongly recommended for all students only after the freshman year.

Undergraduate courses accepted as humanities or social science electives are given in the first two columns of the following table. In the third column, selections or sequences of courses that form a reasonably sound foundation in each discipline are given. Interested students are urged to obtain further information from the appropriate departments.

A foreign language is credited as a humanities course.

Auditing

Regularly enrolled students in the School of Engineering who want to audit courses in any of the undergraduate schools of the University must get the oral consent of the instructor to attend the class but do not register for the course. No record is kept of the audit. Regular students may audit classes each semester free of charge.

Humanities Division

Department	Courses Qualifying	Suggested Program
American and Southern Studies	All courses	
Arabic	All courses	
Catalan	110a–b	
Chinese	All courses except 231a–b	
Classics	All courses	150, 207–209, 217.
Communication Studies and Theatre	All theatre courses except 221; All Communication Studies except 100	Theatre 100, 201–202, 203, 204; Communication Studies 220, 221.
English	All courses except 100W	Choose from 104W through 106W, 208a–208b, 210, 211.
East Asian Studies	All courses	
European Studies	All courses	
Fine Arts	All except studio courses	110–111 and selections from 210, 211, 221, 230–231.
French	All courses	104a–b, 207–208.
German	All courses	104, 221–222.
Greek	All courses	
Hebrew	All courses	
Humanities	All courses	
Italian	All courses	103.
Japanese	All courses	
Latin	All courses	
Latin American Studies	All courses	
Music	All courses listed under music for liberal arts credit in the Arts and Science catalog, except MUSL 147, 170, and 171.	
Philosophy	All courses	Reasoning and logic: 102; Ideas: 100 and/or 244; Values: 206, 252.
Portuguese	All courses	201, 223,
Religious Studies	All courses	208, 209, 130 or 131.
Russian	All courses	
Spanish	All courses	For language facility: 104, 223; for humanities: 104 and 221, 223.

Social Science Division

Department	Courses Qualifying	Suggested Program
Anthropology Economics and Business Administration	All courses All courses in economics except 201. Business administration courses must be classed as open electives.	Econ 100 and 101 plus institutional structure 209, 274.
History	All courses; 200-level courses recommended	U.S.: Do not take 170–171 if taken in high school. Select from 268 through 289. Western Civilization: 100–101; Latin America: 160–161.
Human Resources Linguistics Music History Political Science Psychology	1024, 1100 All courses MUSL 147, 170, 171 All courses All College of Arts and Science psychology courses except 201, 208, 209, 234, 236, 259, 269ab, 272, 274, 277, 279	In order: 101, 240 101 and selection from: 211, 214, 215, 221, 222, 225, 231.
Science, Technology, and Humanities Sociology	101, 190, 205, 260 All courses	101 and for Organizations: Social Psychology 260; Social Problems: 102, 242.

Technology-Society Electives. 3 hours. This area seeks to integrate elements contributing to technological change, including technology, business, economics, public policy, and social need. The following courses may be included in the group: CS 151, ES 153, 155, 157, 159, MT 150, 214, 230, 231, 255, 261, 262, 275, CE 279, Econ 266, and Phil 244.

Open Electives. Some courses, such as Communication Studies 100, which is prerequisite for all other communication studies courses, and many of those courses excluded from the humanities and social science listings, may be counted only as open electives.

Officer education courses Military Science 113, 151, 152, and Naval Science 231 and 241 may be taken as open electives. NS 121 may be used as an open elective if the student has not taken ME 220a. No other officer education courses earn credit toward a degree. AFROTC students may count 6 hours of their military courses as open electives.

Master of Engineering

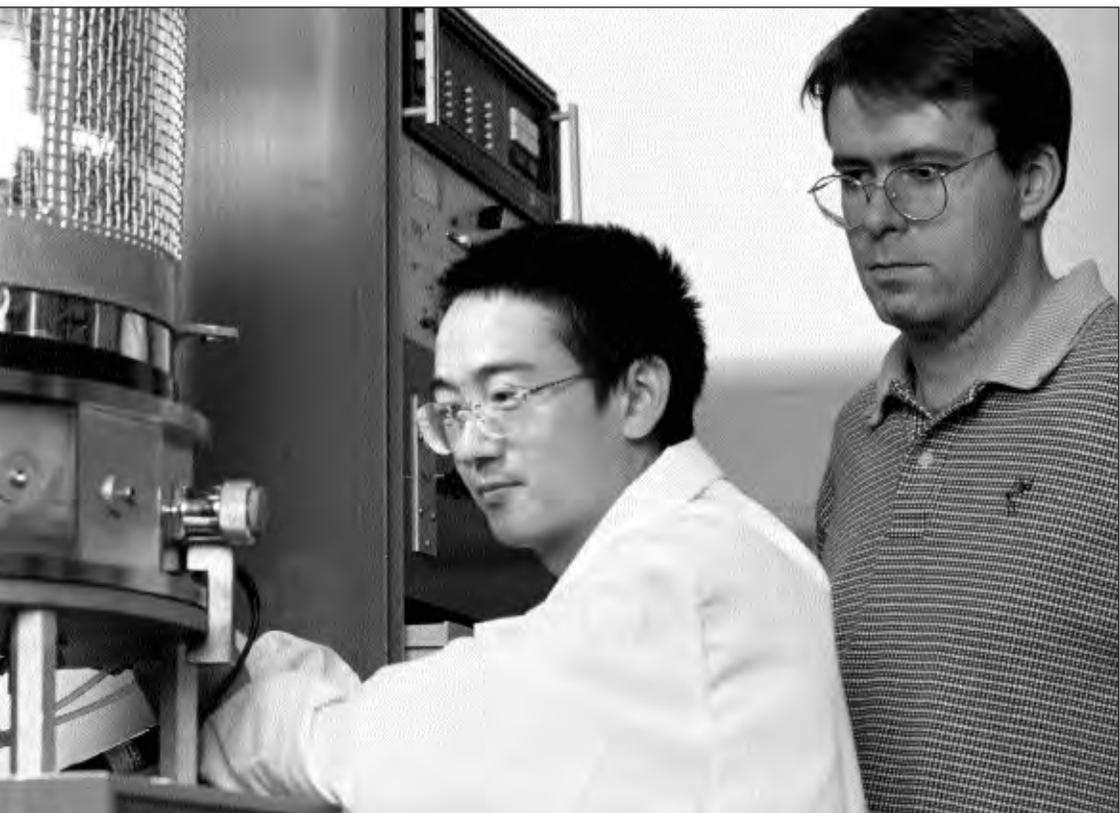
The Master of Engineering (M.Eng.) is an advanced professional degree awarded by the School of Engineering and especially designed for engineering practitioners who may prefer to work while doing professional study. It is also suitable for individuals who apply directly from undergraduate school—

but the thrust of the program is toward professional practice in engineering rather than research or teaching. The degree is currently offered in biomedical engineering, chemical engineering, civil engineering, computer science, electrical engineering, environmental engineering, management of technology, materials science and engineering, and mechanical engineering.

Students must complete 30 hours of approved course work. For information on the Accelerated Graduate Program in Engineering degrees, see the chapter on *Special Programs*. A maximum of 6 hours of graduate-level work may be transferred from another institution. Residency requirements are flexible, and a maximum period of seven years is allowed to complete the degree. An extensive, written design report shall be submitted on a project approved by the student's committee.

Admission to the Master of Engineering program normally requires graduation from an approved undergraduate program in engineering or a related scientific discipline, attainment of a *B* average in undergraduate courses applicable to the student's career goals, and recommendations containing favorable appraisals of professional promise and attitude. A period of successful work experience prior to application to the program will also be given consideration. Application for admission should be sent to the Associate Dean of the School of Engineering. Further information about the program may be obtained by writing to the same office.

For information on integrated Bachelor and Master's of Engineering degrees, see the chapter on *Special Programs*.



Special Programs

1

Honors Programs

Honors programs allow selected undergraduate students to develop individually through independent study and research. Individual honors programs are described in the *Courses of Study* chapter.

Requirements vary somewhat but, in general, to qualify for consideration a student should have (a) completed the technical course requirements of the first two years, (b) attained a minimum grade average of 3.2 in all work taken for credit, and (c) shown evidence indicating a capacity for independent study and/or research. Formal admission is by election of the department concerned. Once admitted, candidates remain in the program only if they maintain a 3.2 or higher grade average.

Accepted candidates normally begin honors study in the junior year, but exceptions may be made for outstanding seniors. Honors students are usually exempt from some junior and senior class work in their major field in order to devote more time than other students to research, independent study, and graduate level courses. A comprehensive examination or written research report is required.

Successful candidates are awarded Honors in their area of interest. This designation appears on their diplomas.

Three-Year Program

The School of Engineering encourages students who so desire to earn a baccalaureate degree in three years. Three-year students normally will be in residence for three regular academic years and three summer sessions. They may enter in June or August. Entering freshmen should confer with the chair of their prospective department at the time of first enrollment to plan a suitable schedule of classes. In general, students should take the required mathematics and basic sciences during the first twelve to fifteen months in residence. They will then be prepared to take many junior-level basic engineering science courses during the second regular academic year. The third academic year should differ only slightly from the regular senior year.

Some liberal arts elective work must be taken during the summer session—and this may prove to be a limitation. The three-year student must also be prepared to accept some overload beyond the 15 to 16 hours per semester required in the normal four-year program.

Teacher Education

Students who are interested in preparing for licensure as secondary school teachers should plan their programs in consultation with the associate dean in the School of Engineering. The School of Engineering and Peabody College offer a teacher education program leading to secondary school licensure in physics (grades 9 through 12) and computer technology. Students major in engineering science in the School of Engineering and complete a second major in education at Peabody College.

More specific information on professional education course requirements can be found under the *Licensure for Teaching* chapter in the Peabody College section of this catalog. Inquiries can also be made to the Office of Teacher Licensure at Peabody.

Double Major

It is possible for a student to combine an engineering field with a second area outside the School of Engineering. The student must obtain prior approval of each department and satisfy the requirements of each major.

Certain double majors involving two programs within the School of Engineering have been approved by the faculty. The approved double majors are Biomedical Engineering/Electrical Engineering, and Biomedical Engineering/Chemical Engineering.

The double major is indicated on the student's transcript. Only one degree is awarded, from the school in which the student is enrolled.

Minors

A minor consists of at least five courses of at least 3 credit hours each within a recognized area of knowledge. A minor offers students more than a casual introduction to an area, but less than a major. A minor is not a degree requirement, but students may elect to complete one or more. Courses may not be taken on a Pass/Fail basis. A minor for which all designated courses are completed with a grade point average of at least 2.0 will be entered on the transcript at the time of graduation.

When a minor is offered in a discipline that offers a major, only those courses that count toward the major may be counted toward the minor. Students should refer to the appropriate sections of this catalog for specific requirements. Currently, minors are offered in Management of Technology, Materials Science, Computer Science, Environmental Engineering, and in most disciplines of the College of Arts and Science.

Students should declare their intention to pursue minors by completing forms available in the Student Records Office of the School of Engineering. Departments and programs assign advisers to students who declare minors in their areas. Students are responsible for knowing and satisfying all requirements for the minors they intend to complete.

PAVE

PAVE (Preparatory Academics for Vanderbilt Engineers) is a six-week summer engineering program designed to allow a faster adjustment to college, to show students what is expected academically and how to go about accomplishing it. The curriculum is multidisciplinary so as to strengthen students academically. The program involves in-depth problem solving, computer skills, laboratory experiments, and technical writing—all in an engineering/science environment. The participants have access to all campus academic and recreational facilities. Optional non-academic weekend activities are planned to provide a well-balanced summer. The program is open to students in the eleventh or twelfth grade or to high school postgraduates.

Three-Two Program

The School of Engineering recognizes a Three-Two program with certain liberal arts colleges. This plan allows students to attend a liberal arts college for three years of undergraduate study, usually majoring in mathematics or science, where they meet the residence requirements for a degree from that institution. They then transfer to the Vanderbilt University School of Engineering for two years of technical work in an engineering curriculum. Upon completion of the five years, students receive two bachelor's degrees, one from the liberal arts college and one from the School of Engineering.

To complete all required technical courses at Vanderbilt in two years, students enrolled in the Three-Two program should complete, before coming to Vanderbilt, as many as possible of the mathematics and science courses listed in the specimen curriculum—in general, mathematics through differential equations, a year of physics, a year of another laboratory science (usually chemistry), and a semester of computer programming. Students should plan their three years of liberal arts study so as to satisfy as nearly as possible the freshman and sophomore requirements of the particular engineering curriculum in which they will major at Vanderbilt.

Admission to the Three-Two program must be certified by the liberal arts college and is recognized by Vanderbilt University School of Engineering through special agreement between Vanderbilt and each of the liberal arts colleges participating in the Three-Two program.

Dual Degree Program with Fisk University

A coordinated dual degree program between the Vanderbilt University School of Engineering and Fisk University is especially designed to permit students to obtain an A.B. degree in biology, chemistry, physics, or mathematics from Fisk and a B.E. or B.S. degree in engineering from Vanderbilt, generally within five years.

For the first three years, the student is enrolled at Fisk in a science curriculum and, by cross-registration in the second and third years, takes introduc-

tory engineering courses at Vanderbilt. During the fourth and fifth years, the student is enrolled at Vanderbilt, following principally an engineering curriculum at Vanderbilt and completing science courses at Fisk. At the end of five years, the student should be able to satisfy the requirements for both bachelor's degrees.

Financial aid is available for qualified, deserving students. Additional information is available from the director of transfer admissions in the Office of Undergraduate Admissions.

Integrated Bachelor and Master of Engineering

On the basis of recommendations containing favorable appraisals of professional promise, undergraduate students in the School of Engineering who have completed at least 75 hours with at least a *B* average may be accepted into an integrated Bachelor of Engineering–Master of Engineering program. The last two years of a student's program is planned as a unit and may thereby include a broader choice of technical work.

Completion of all work toward both degrees is required before either degree is awarded. To protect the option of dropping back to the Bachelor of Engineering as a terminal degree, students who enter the integrated B.E.–M.Eng. program are advised to satisfy all requirements for the Bachelor of Engineering degree as promptly as feasible. Further information about the program is available from the chair of the student's major department.

Accelerated Graduate Program in Engineering

Students who enter Vanderbilt with a significant number of credits (20 to 30 hours), earned either through Advanced Placement Tests or in college courses taken during high school, are eligible for the Accelerated Graduate Program in Engineering. Through this program, a student is able to earn both a bachelor's degree and an M.S. degree in about the same time required for the bachelor's degree. To be eligible for the program a student must complete 86 hours (senior standing) by the end of the sophomore year with at least a 3.5 grade point average. With the approval of the faculty in their major department, students apply to the Graduate School for provisional admission and take one course approved for graduate credit each semester of the junior year. These courses will be credited toward the M.S. degree. Upon successful completion of these courses, the student is admitted to the Graduate School.

During the fourth year the student takes three courses (9 hours) for graduate credit each semester, and the remaining 6 to 10 undergraduate hours required for the bachelor's degree. The student receives the bachelor's degree at the end of the fourth year and spends the summer finishing a master's thesis to complete the M.S. degree. Further information can be obtained from the chair of the student's major department.



E



Honors

1

Founder's Medal

The Founder's Medal, signifying first honors, was endowed by Commodore Cornelius Vanderbilt as one of his gifts to the University. The recipient is named by the Dean after consideration of faculty recommendations and the grade point averages of the year's *summa cum laude* graduates.

Academic Honors Designation

Honors, noted on diplomas and published in the Commencement Program, are earned as follows:

Students who earn grade point averages of 3.25 or higher will graduate *cum laude*; 3.50 or better, *magna cum laude*; 3.75 or better, *summa cum laude*.

Students successfully completing one of the special Honors programs of study also have this designation on their diplomas.

Detailed information concerning the grade point average may be found under *Academic Regulations*.

The Dean's List

The Dean's List for academic excellence is published after each semester. In order to be included on the Dean's List in a given semester, a student must be enrolled for a minimum of 12 graded hours, not receive a grade of *F*, not have missing or temporary grades, and achieve a minimum grade point average of 3.25 for Honors, 3.5 for High Honors, or 4.0 for Highest Honors.

Honor Societies

TAU BETA PI. The Tennessee Beta chapter of the Tau Beta Pi Association was installed at Vanderbilt University 7 December 1946. Members of Tau Beta Pi are selected from undergraduate students in the School of Engineering who have completed at least four semesters of required work, are in the upper eighth of their class scholastically, and have shown marked qualities of character and leadership; seniors in the upper fifth of their class scholastically are also eligible for election.

CHI EPSILON. The Vanderbilt chapter of Chi Epsilon, installed 18 March 1967, is restricted to undergraduate civil engineering students in the top third of their class. Election is based on grade point average, faculty recommendation, and exceptional achievements in extracurricular campus activities.

ETA KAPPA NU. The Epsilon Lambda chapter of the Eta Kappa Nu Association was established 22 April 1966. Undergraduate members are selected from the upper third of the class in electrical engineering. Eta Kappa Nu recognizes leadership and scholastic accomplishment twice annually, selecting members also from the professional body of practicing engineers.

ALPHA SIGMA MU. The Vanderbilt chapter of Alpha Sigma Mu was installed in 1977. Senior materials engineering students in the upper twenty percent of their graduating class are eligible upon recommendation of departmental faculty.

PI TAU SIGMA. The Delta Alpha chapter of Pi Tau Sigma was installed on the Vanderbilt campus 22 April 1971, for the purpose of recognizing scholastic achievement and professional promise in junior and senior mechanical engineering students. Students are elected to membership twice each year on the basis of academic excellence and recommendations from the faculty and chapter members.

SIGMA XI. The Vanderbilt chapter of the Society of the Sigma Xi recognizes accomplishment, devotion, and originality in scientific research. Associate members are elected annually from graduate-level students of the University.

HONOR SOCIETIES FOR FRESHMEN. Freshmen who earn a grade point average of 3.5 or better for their first semester are eligible for membership in the Vanderbilt chapter of Phi Eta Sigma and Alpha Lambda Delta.

Other Awards and Prizes

DEAN'S AWARD FOR OUTSTANDING SERVICE. Awarded to the senior candidate in the School of Engineering who has shown remarkable leadership qualities and who has also made the greatest contribution in personal services to the School.

DEAN'S AWARD FOR OUTSTANDING SCHOLARSHIP. Awarded to each member of the senior class who graduates with a 3.75 or higher grade point average.

PROGRAM AWARDS. The faculty associated with each of the departments of the school annually bestows a certificate and a prize to one member of the graduating class who is judged to have made the greatest progress in professional development during his or her undergraduate career. The Arthur J. Dyer Jr., A. Max and Susan S. Souby, and Greg A. Andrews awards are considered in this category.

GREG A. ANDREWS MEMORIAL AWARD. Made to the senior in civil engineering who has been judged by the faculty to have made the greatest progress in professional development and who plans to do graduate work in environmental and water resources engineering.

THOMAS G. ARNOLD PRIZE. Awarded by the biomedical engineering faculty to the senior student who presents the best design of a biomedical engineering system or performance of a research project in the application of engineering to a significant problem in biomedical science or clinical medicine.

WALTER CRILEY PAPER AWARD. Endowed and awarded in electrical engineering for the best paper on an advanced senior project in electrical engineering.

JAMES SPENSER DAVIS AWARD. Given annually by the student chapter of Eta Kappa Nu in memory of Mr. Davis, this award recognizes excellence in the undergraduate study of electronics.

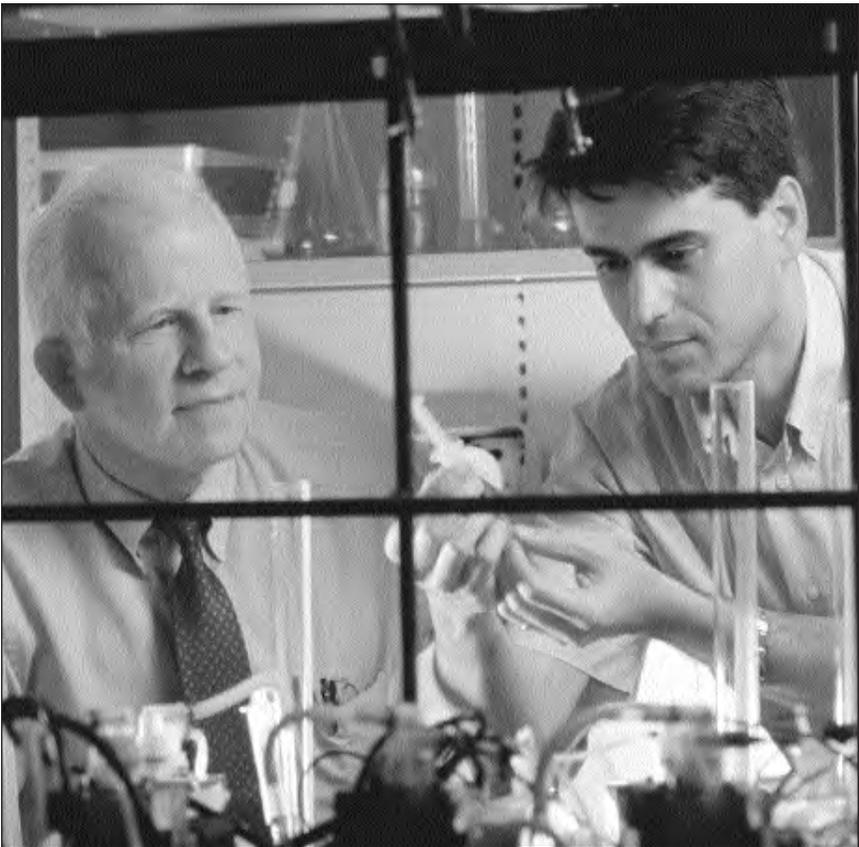
ARTHUR J. DYER JR. MEMORIAL PRIZE. Endowed and awarded in Civil Engineering to the member of the senior class doing the best work in structural engineering.

WALTER GILL KIRKPATRICK PRIZE IN CIVIL ENGINEERING. Endowed and awarded in the School of Engineering to the most deserving third-year undergraduate student in civil engineering.

WILSON L. AND NELLIE PYLE MISER AWARD. Awarded to the senior engineering student who has been judged by the faculty of the School of Engineering to have excelled in all aspects of mathematics during his or her undergraduate career.

STEIN STONE MEMORIAL AWARD. Endowed and awarded in the School of Engineering to the member of the graduating senior class who has earned a letter in sports, preferably in football, and who is adjudged to have made the most satisfactory scholastic and extramural progress as an undergraduate.

A. MAX AND SUSAN S. SOUBY AWARD. Established by Armand Max Souby Jr., in honor of his father, former alumni secretary of the University, and his mother, first headmistress at Harpeth Hall School. The award is made annually to a graduating senior chemical engineering major.





Academic Regulations

1

Honor System

All academic work at Vanderbilt is done under the honor system (see Life at Vanderbilt chapter).

Responsibility to Be Informed

It is the responsibility of the student to keep informed of course requirements and scheduling. Failure to do so may jeopardize graduation.

Academic Advising

A faculty adviser is appointed for each student. This adviser is chosen from the faculty in the student's major, when the major is known. For students who have not chosen a major upon entry, an adviser is selected from faculty in any department. If a student later chooses a different department for his or her major, a corresponding change of adviser is made. Engineering students are required to see their advisers at registration and any other time changes must be made in their programs of study. Any student who has academic difficulty is expected to see his or her faculty adviser for counsel. Faculty advisers can also provide useful career guidance.

Accreditation and Registration

Legislation exists in the various states requiring registration of all engineers who contract with the public to perform professional work. Although many engineering positions do not require professional certification, Vanderbilt supports registration and encourages its graduates to take the Fundamentals of Engineering examinations given by the Tennessee State Board of Architecture and Engineering Examiners as soon as they become eligible.

Bachelor of Engineering degrees in biomedical engineering, chemical engineering, civil engineering, computer engineering, electrical engineering, and mechanical engineering are accredited by the Accreditation Board for Engineering and Technology. Students in these programs may take the Fundamentals of Engineering examinations as seniors. In addition, proven professional experience is a requirement for registration. Other state boards may have different rules.

Graduate Record Examination

Most graduate schools, including Vanderbilt's, require or strongly encourage submission of Graduate Record Examination scores as a condition for ad-

mission. As a service to students the Psychological and Counseling Center administers the GRE periodically. Further information can be obtained from the Counseling Center or by writing the Educational Testing Service, Box 6000, Princeton, New Jersey 08540.

Grading System

A semester hour represents one hour of class lecture (or recitation) or one laboratory period per week in a course taken for a full semester. Work is graded by letter. *A*, *B*, *C*, and *D* are considered passing grades. The grade *E* is conditional and implies a reexamination, whereupon the *E* is changed to *D* or *F*. The grade *F* signifies failure. A student who withdraws from a course before the date given in the University calendar is given the grade *W*. A student may not withdraw from a course after that date.

Grade Point Average

A student's grade point average is obtained by dividing the total grade points earned by the number of hours for which the student registered, excluding courses taken for no credit, those from which the student has withdrawn, those with the temporary grade of *I*, and those that are completed with the grade *Pass*.

Defined Grades with Corresponding Grade Points Per Credit Hour

A	= 4.0	C	= 2.0
A-	= 3.7	C-	= 1.7
B+	= 3.3	D+	= 1.3
B	= 3.0	D	= 1.0
B-	= 2.7	D-	= 0.7
C+	= 2.3	F	= 0.0

Pass-Fail Course Provision

Students will be permitted to take a limited number of courses for which they will receive a grade of either *Pass* or *Fail*. Regulations for taking courses on a Pass-Fail basis are:

1. The student must have achieved at least sophomore standing.
2. No more than 9 hours graded *Pass* will be accepted toward the B.S. or B.E. degree.
3. No more than 6 hours of introductory level courses may be included in the total of *Pass* hours.
4. No more than two courses may be taken on a Pass-Fail basis in any one semester.
5. A minimum of 12 hours must be taken on a graded basis in any semester that a Pass-Fail course is taken.

6. No student on academic probation will be allowed to register for any course on a Pass-Fail basis.

7. No required courses may be taken on a Pass-Fail basis.

8. No course taken in the School of Engineering may be taken on a Pass-Fail basis, except as noted below.

The Pass-Fail option applies only to courses classified as open electives, elective courses offered in the College of Arts and Science, and technical electives not considered part of the student's major field as defined by the curriculum committee of the major field.

Credit hours earned in courses taken Pass-Fail are not included in calculating grade point averages. Hours taken on a Pass-Fail basis on which the grade *Fail* is received are included in computation of grade point averages unless removed by repeating the course. A student taking courses on a Pass-Fail basis, however, must still earn the minimum grade point average required of students not taking Pass-Fail courses.

Students electing the Pass-Fail option will be expected to meet all normal course requirements (e.g., reports, papers, projects, examinations, laboratory attendance, etc.) and will be graded in the normal way. At the end of the semester, students enrolled on a Pass-Fail basis will receive a letter grade; all grades of *D-* or above will be recorded as a *Pass*. Instructors will not be informed of the names of students in a course who are registered on a Pass-Fail basis.

Students may register on a Pass-Fail basis or change from a graded basis to Pass-Fail basis until the end of the change period, usually one week after classes begin (exact dates appear in the *Academic Calendar*). Changes from Pass-Fail basis to a graded basis may be made until the date indicated on the *Academic Calendar*.

Transfer students are eligible for Pass-Fail courses after they have been at Vanderbilt for one semester.

E: *Condition*

An instructor may assign the grade *E* in a course other than a laboratory course when in the instructor's judgment the work represents a borderline case and additional evidence is necessary to determine whether the student should be given the grade *D* or *F*.

The grade *E* must be removed during the regular reexamination period of the student's next semester in residence or it becomes an *F* by default. A student who takes a reexamination to remove an *E* will receive the final grade *D* or *F* in the course, depending on whether the grade on the second examination is passing or failing. Only one reexamination is allowed in the case of the grade *E*.

M: *Missed Final Examination*

The grade *M* will be given to a student who missed the final examination and is not known to have defaulted, but the grade *F* will be given to a student

who could not have passed the course even with the final examination. Students who are ill at the time of a final examination are expected to notify the Student Records Office before or during the examination period. It is the responsibility of the student who is absent from a final examination to request permission to take a makeup examination during the makeup examination period of the student's next semester in residence. This request, giving the reason for missing the exam, must be submitted to the Office of the Dean before the first day of the next semester, regardless of whether the student is in residence that semester. In the absence of a request for a delayed examination, the *M* grade automatically becomes an *F*, whether or not the student is in residence. If the student has received permission to take a makeup final examination but is not in residence the next semester, completion of the examination may be delayed up to one year from the date of the missed examination, provided also that the examination is taken during one of the regular makeup examination periods. Failure to take the makeup examination within the prescribed time will result in an *F* grade. The grade for a student who misses a final examination and whose work is incomplete in other respects will be recorded as *MI*.

I: Incomplete

When an incomplete grade has been given, it is the student's responsibility to make arrangements to complete the work. An incomplete grade not cleared after one year or before the student graduates becomes an *F*. A course carrying an incomplete grade will not be included in the grade point average for academic progress determination.

Reexamination

For those students who receive an authorized grade of *M* or *E*, the departmental office will arrange makeup examinations during the next semester and will notify the student and the instructor of the time and place of the examination. Reexaminations are normally held during the first ten days of each semester to allow students who also fail the makeup examination to enroll in the same course if offered in the succeeding semester. The Administrative Committee may authorize a makeup examination at some other time, but a special \$50 examination fee will be charged.

F: Failure

A subject in which the grade *F* is received must be taken again in class before credit is given. A student who deserts a course without following the correct procedure for dropping it will receive an *F* in the course.

Failure of Candidates for Graduation. A candidate for graduation who fails not more than one course in the senior year will be allowed one reexamination, provided all other requirements for graduation have been met. Reex-

amination for the removal of the grade *F* during any semester of the senior year will be given immediately after the close of the last semester of the student's senior year. This reexamination will result in the grade of either *D-* or *F* in that particular course. Reexamination must be requested through the Office of the Dean.

RC: The Repeated Course Designator

Courses in which a student has earned a grade lower than *B-* may be repeated under certain conditions. A course in which the student earned a grade between *D-* and *C+*, inclusive, may be repeated only once. The repeat must be accomplished within one year of the first attempt for courses offered every year, or, for courses not offered within a year, the first time the course is offered. Failed courses may be repeated at any time. A course may be repeated only on a graded basis, even if the course was originally taken Pass-Fail. Courses taken Pass-Fail in which the student earned a Pass may not be repeated. When registering for a course previously completed, the student must indicate that the course is being repeated.

Students should note that repeating a course may improve the grade point average, but it may also lead to problems in meeting minimum hour requirements for class standing and progress toward a degree. Repeating a course does not increase the number of hours used in calculation of the grade point average. All grades earned will be shown on the transcript, but only the latest grade will be used for computation of grade point averages.

W: Withdrawal

A student may withdraw from a course at any time prior to the deadline for withdrawal published in the University Academic Calendar. The deadline is usually the Friday following the date for reporting mid-semester deficiencies. The grade *W* is recorded for any course from which a student withdraws. A course in which a *W* is recorded is not used in figuring grade point averages.

Requirements for the Degree

Candidates for a degree must have completed satisfactorily all curriculum requirements, have passed all prescribed examinations, and be free of indebtedness to the University.

Grade Average Requirements

To be eligible for graduation, a student must have passed all required courses, including the technical electives, and shall have earned a minimum average grade of *C* in (a) all courses taken, (b) courses taken within the School of Engineering, and (c) major department courses.

Any student who has been on probation for failure to meet the semester grade point average requirements in two successive semesters may be dropped for failure to meet the requirement in a third successive semester.

Hours Required for Graduation

The specific course requirements and total hours required for the bachelor's degree vary with the student's major program. Detailed requirements for each program are shown in the specimen curricula in the Courses of Study section. If graduation requirements change during the time students are in school, they may elect to be bound by the requirements published in the catalog in either their entering or their graduating year.

If a student elects or is required to take Mathematics 133 (Pre-calculus Mathematics), the minimum semester hours required for graduation shall be raised by the hours earned in that course.

Transfer Credit

It is the student's responsibility to provide all information needed for an assessment of the program for which transfer of credit is requested. Work transferred to Vanderbilt from another institution will not carry with it a grade point average. No course in which a grade below C- was received will be credited toward a degree offered by the School of Engineering.

Transfer students must complete at least 60 hours of work at Vanderbilt. Two of the semesters must be the senior year.

Summer Work at Another Institution

Work that a student contemplates taking at a summer school other than Vanderbilt is treated as transfer work and must be approved in advance in writing by the student's adviser and the associate dean in the School of Engineering, at which time a course description must be submitted. A course a student has taken at Vanderbilt may not be repeated in another institution to obtain a higher grade.

Credit by Examination

In certain circumstances students may be awarded course credit by departmental examination. (This procedure is distinct from the award of credit through the College Board Advanced Placement Examinations, taken prior to a student's first enrollment at Vanderbilt or another college.)

Students who want to earn credit by departmental examination should consult the associate dean concerning procedures. To be eligible, students must be in good standing.

Students must obtain the approval of the chair of the department that is to give the examination and of the instructor designated by the chair. Students may earn up to 8 hours of credit by examination in any one department, al-

though this limitation might be raised on petition to the Administrative Committee. Students may attempt to obtain credit by examination no more than twice in one semester, no more than once in one course in one semester, and no more than twice in one course.

Students will be given the grade Pass in courses for which credit is received by examination. These courses will not be used in determining grade point averages.

Students enrolled for at least 12 hours are not charged tuition for hours for which credit by examination is awarded, so long as the amount of credit falls within the allowable limits of an 18-hour tuition load, including no-credit courses dropped after the change period of registration. Students in this category must pay a fee of \$50 for the cost of administering the examination. Full-time students with a tuition load exceeding 18 hours and students taking fewer than 12 hours pay tuition at the regular rate with no additional fee.

Registration

A period is designated in each semester during which continuing students, after consultation with their advisers, register for work to be taken during the next term. Detailed instructions for registration by computer (OASIS) are given in the *Schedule of Courses*.

See the explanation of change fees and late registration fees in the chapter on *Financial Information*.

Change of Course

During the change period of registration as defined in the *Academic Calendar*, students may add or drop courses without academic penalty after securing approval from their adviser and the associate dean. After the change period, new courses may not be added, except under very unusual circumstances and with the approval of the adviser, the course instructor, and the associate dean.

A student may drop a course without entry on the final record, provided the course is dropped during the change period of registration. After the first week of classes and extending to the end of the eighth week, a course may be dropped with approval of the student's adviser and the associate dean of the School of Engineering; the grade *W* (withdrawal) will be recorded.

To drop a course or change sections after the change period ends, the student must procure a Change of Course card from the Student Records Office. The student then obtains the signature of his or her adviser and of all instructors involved in the proposed change and returns the card to the Student Records Office.

Examinations

Examinations are usually given at the end of each semester in all undergraduate courses except for certain laboratory courses or seminars. The in-

structor may exempt students who have excelled in course work from the final examinations. Exams will be no longer than three hours in length and are given according to the schedule published in the *Schedule of Courses* (the School of Engineering does not offer an alternate examination schedule). All examinations are conducted under the honor system.

Residence Requirements

A minimum of four semesters including the last two semesters shall be spent in residence in the School of Engineering. During these four or more semesters, the student must have completed at least 60 semester hours of an approved curriculum in one of the degree programs. In unusual cases, an exception to this requirement may be made by the Administrative Committee upon the recommendation of the department concerned.

Class Standing

To qualify for sophomore standing, a student must pass a minimum of 24 hours and maintain a grade point average of at least 1.7. Freshmen who fail to qualify for sophomore standing after two semesters are placed on probation. Freshmen who fail to qualify for sophomore standing in three semesters may be dropped. The summer session counts as a semester for this purpose.

To qualify for junior standing, a student must pass a minimum of 54 hours and maintain a grade point average of at least 1.8. Sophomores who fail to qualify for junior standing at the end of two semesters after qualifying for sophomore standing are placed on probation. A student who has been on probation for failure to qualify for junior standing and who does not qualify for junior standing in one extra semester may be dropped.

A student who has qualified for junior standing has two semesters to qualify for senior standing. Senior standing requires the completion of 86 hours and a minimum grade point average of 1.9. Juniors who do not qualify for senior standing at the end of the second semester after qualifying for junior standing will be placed on probation. A student who has been on probation for failure to qualify for senior standing and who does not qualify for senior standing in one extra semester may be dropped.

Seniors who do not qualify for graduation at the end of the second semester after being promoted to the senior class will be placed on probation and given one more semester to complete the graduation requirements. A senior who has been on probation for failing to complete the graduation requirements and who fails to complete the requirements in one additional semester may be dropped.

Probation

A freshman who fails to complete 9 hours and earn a 1.7 grade point average during any semester is placed on probation. A sophomore, junior, or senior who fails to complete 12 hours and earn a 2.0 grade point average during

any semester is placed on probation. The student is removed from probation after completing 12 hours and earning a 2.0 grade point average during any semester provided that sufficient credit hours are obtained for promotion to the next class.

Full-time sophomores are removed from probation after earning 12 hours and a 2.0 grade point average in a given semester, except that those who have not qualified for junior standing after two semesters as a sophomore must in the next semester fulfill the requirement for junior standing. Failure to do so will cause the student to be dropped.

A student who fails all courses in any semester will be dropped.

To remain in good standing, a student must pursue a program leading toward a degree in the School of Engineering. A student who is deemed by the Administrative Committee not to be making satisfactory progress toward a degree in engineering will be dropped.

A student authorized by the Administrative Committee to carry fewer than 12 hours because of illness or outside employment, or for some other valid reason, may be placed on probation if the student's work is deemed unsatisfactory by the Administrative Committee and will be removed from probation when the committee deems the work satisfactory.

Class Attendance

Students are expected to attend all scheduled meetings of each class in which they are enrolled. At the beginning of each semester, instructors will explain the policy regarding absences in each of their classes. Students having excessive absences will be reported to the Dean's office. If class attendance does not improve thereafter, the student may be dropped from the class with the grade *W*, if passing at the time, or the grade *F*, if failing at the time. Class attendance may be a factor in determining the final grade in a course.

Scholarship Requirements

Those students having honor scholarships are expected to maintain a 3.0 grade point average while taking a minimum of 12 hours. Failure to maintain a 3.0 grade point average will result in the cancellation of the scholarship.

Grade Reports

A grade report will be sent to the student at his or her home address as soon as possible after the conclusion of each semester. This report will give the total hours and grade points earned during the semester, as well as the cumulative hours and grade points earned through that semester. Students should examine these reports carefully and discuss them with their faculty advisers. Any errors should be reported immediately to the Student Records Office of the School of Engineering.

A grade reported and recorded in the University Registrar's Office may be changed only upon written request of the instructor and with approval of the Administrative Committee. The committee will approve such a change only on certification that the original report was in error.

Undergraduate Enrollment for Graduate Credit

A qualified Vanderbilt senior undergraduate may enroll in courses approved for graduate credit by the graduate faculty and receive credit which, upon admission to the Vanderbilt University Graduate School, may be applicable toward a graduate degree. The principles governing this option are as follows:

1. Work taken under this option is limited to those 200- and 300-level courses approved for graduate credit and listed as such in the catalog of the Graduate School, excluding thesis and dissertation research courses and similar individual research and reading courses.

2. Such work must be in excess of that required for the bachelor's degree.

3. The student must, at the time of registration, have a *B* average in the preceding two semesters.

4. The total course load, graduate and undergraduate courses, must not exceed 18 hours in any one semester.

5. Undergraduate students who want to count for graduate credit courses taken under this option must consult the instructor of each course and must, at the time of registration, declare their intention on a form available in the Graduate School office.

6. Permission for Vanderbilt undergraduates to enroll in graduate courses does not constitute a commitment on the part of any program to accept the student as a graduate student in the future.

7. An undergraduate student exercising this option will be treated as a graduate student with regard to class requirements and grading standards.

All students who want to take 300-level courses, whether under this option or not, must obtain the written approval of their academic adviser, the instructor of the course, the Associate Dean for Research and Graduate Affairs in the Engineering School, and the Dean of the Graduate School.

Interested students should consult their faculty advisers and with the Graduate School office before attempting to register for graduate courses under this option.

Leave of Absence

A student at Vanderbilt or one who has been admitted to Vanderbilt may, with the approval of his or her academic dean, take an official leave of absence for as much as two semesters and a summer session. Leave of absence forms are available in the Student Records Office. A student who fails to register in the University at the end of the leave will be withdrawn from the University.

Change of Address

Any change of address should be reported to the School of Engineering Student Records Office or the University Registrar. The University will consider notices or other information delivered if mailed to the address on file in the University Registrar's office.

Special Students

The normal program of study is 12 to 18 hours per semester. Students authorized by the Administrative Committee to register for fewer than 12 hours are classified as special students.

Withdrawal from the University

A student proposing to withdraw from the University must notify the Student Records Office of the School of Engineering so that proper clearance may be accomplished and that incomplete work is not charged as a failure against the student's record.



Courses of Study

1

Hours are semester hours. The bracketed [3] indicates 3 semester hours of credit for one semester, and [3–3] for a two-semester course.

100-level courses are primarily for freshmen and sophomores.

200-level courses are normally taken by juniors and seniors but are open also to qualified sophomores and freshmen.

250 through 299 courses may count for graduate credit if approved by the instructor, the adviser, and the Dean of the Graduate School.

W symbols used in course numbers designate courses that meet departmental writing requirements.

Abbreviations

BME	Biomedical Engineering
CE	Civil Engineering
ChE	Chemical Engineering
CmpE	Computer Engineering
CS	Computer Science
EECE	Electrical Engineering and Computer Engineering
ES	Engineering Science
ENVE	Environmental Engineering
ME	Mechanical Engineering
MSE	Materials Science and Engineering
MT	Management of Technology

E

The Freshman Year

1 The freshman year curriculum for all of the engineering disciplines is:

Specimen Curriculum

FALL SEMESTER		Semester Hours
Chemistry 102a	General Chemistry	3
Chemistry 104a	General Chemistry Laboratory	1
Mathematics 155a	Analytic Geometry and Calculus	4
	Technology/Society Elective	3
Engineering Science 130	Introduction to Computing in Engineering	3
	Total	14

SPRING SEMESTER		Semester Hours
Chemistry 102b and Chemistry 104b*‡	General Chemistry	3
or	General Chemistry Laboratory	1
Materials Science 150*‡	Introduction to Materials Science	4
Mathematics 155b	Analytic Geometry and Calculus	4
Physics 116a or 117a*	General Physics	4
Computer Science 101*	Programming and Problem Solving	4
Total		16

*See departmental adviser before making a choice.

‡ Chemical engineering and biomedical engineering majors must take Chemistry 102b and 104b.

Applied Physics

I APPLIED Physics at Vanderbilt is an interdisciplinary activity under the supervision of a committee consisting of faculty from the School of Engineering, the College of Arts and Science, and the School of Medicine. In Engineering, it is a component of the Engineering Science Program. The Applied Physics Steering Committee is made up of Jimmy L. Davidson, K. Arthur Overholser, and Robert W. Pitz (*Engineering*); Charles A. Brau, Richard F. Haglund Jr., Sokrates T. Pantelides, and John P. Wikswo (Arts and Sciences, *Physics*); Robert J. Coffey Jr., Dennis Duggon, James A. Patton, and Ronald R. Price (*Medicine*) and chaired by Taylor G. Wang (*Engineering and Physics*). Engineering Science majors may select a set of program electives chosen by the faculty to implement a course of study in Applied Physics. This program has been chosen to meet the needs of students planning to pursue advanced degrees in physics, applied physics, engineering, or related fields, who see an applied physics curriculum in the context of an engineering degree. A parallel program with a liberal arts component is available through the Department of Physics in the College of Arts and Science.

Curriculum Requirements

Applied Physics is a program concentration in Engineering Science and, as such, has the same curriculum requirements. The Applied Physics curriculum shown below is designed to build competence in mathematics, classical mechanics, electromagnetism, optics and wave phenomena, and the quantum theory of solids, as well as to introduce students to original research under the direction of a member of the faculty. In addition, a total of eighteen semester hours are available for a student to develop competence in other areas

of engineering or science. A student following this specimen curriculum will be graduated with one semester hour more than the minimum requirement for Engineering Science.

Specimen Curriculum for Applied Physics

		Semester hours	
		FALL	SPRING
SOPHOMORE YEAR			
Math 175	Analytic Geometry and Calculus	3	–
Math 198	Elementary Differential Equations	–	3
Phys 116b	General Physics	4	–
ES 151	Introduction to Applied Physics	–	3
ME 220a	Thermodynamics I*	–	3
CE 180	Statics*	3	–
ME 190	Dynamics*	–	3
	Engineering Science Elective	3	–
	Humanities–social science elective	3	3
		16	15
JUNIOR YEAR			
ES 260a–b	Mathematical Methods of Applied Science	3	3
Phys 229a–b	Electricity, Magnetism and Electrodynamics	3	3
ME 220b	Thermodynamics II*	3	–
Phys 221	Classical and Modern Optics	–	3
Phys 238	Physics Laboratory: Nuclear	2	–
	Engineering Elective	3	3
	Humanities/social science elective	3	3
		17	15
SENIOR YEAR			
Phys 251	Introductory Quantum Mechanics	3	–
MSE 278	Physics of Solids*	–	3
Phys 237	Advanced Laboratory: Optics or Nuclear Physics	–	2
ES 248a–b	Undergraduate Research*	3	3
BME 210W	Technical Communication	–	3
	Engineering Elective	3	–
	Humanities–social science elective	3	–
	Open elective	3	3
		15	14

*The following substitutions may be made so long as requirements of the ES degree are met: Phys 227a–b for CE 180 and ME 190, Phys 223 and 241 for ME 220a–b, Phys 254 for MSE 278, Phys 291a–b for ES 248a–b.

Biomedical Engineering

CHAIR Thomas R. Harris

DIRECTOR OF GRADUATE STUDIES Robert J. Roselli

PROFESSORS A. B. Bonds, Kenneth L. Brigham, Robert L. Galloway, Jr., Thomas R. Harris,

K. Arthur Overholser, C. Leon Partain, Robert J. Roselli, Richard G. Shiavi,

Dennis Hallahan

ADJUNCT PROFESSOR A. Bertrand Brill

ASSOCIATE PROFESSORS Todd D. Giorgio, Frederick R. Haselton, Paul H. King,
Cynthia B. Paschal, David R. Pickens, III

ASSISTANT PROFESSORS E. Duco Jansen, Peter Konrad, Anita Mahadevan-Jansen

ADJUNCT ASSISTANT PROFESSORS Marilyn K. Silverman, Stephen E. Silverman

I THE Biomedical Engineering Program is designed to prepare students for a wide choice of careers by providing a background in engineering, the humanities, and the physical and life sciences. The undergraduate curriculum serves as a premedical program, preparation for advanced study in biomedical engineering and biomedical sciences, or preparation for a career in the practice of biomedical engineering. Students learn to apply engineering concepts to scientific and practical problems in biology, medicine, and health care. The graduate program prepares students for research and advanced practice in biomedical engineering.

The Department of Biomedical Engineering offers courses of study leading to the B.E., M.S., and Ph.D. degrees.

Undergraduate Honors Program. With faculty approval, junior and senior students in biomedical engineering who have achieved a minimum quality point ratio of 3.5 may be accepted into the program. The program must include up to 6 hours at the 300 level and requires submission of a research report. Students must make a quality point ratio of 3.0 in these classes and maintain an overall 3.5 quality point average to be designated as an honors graduate. The diploma designation is Honors in Biomedical Engineering.

Curriculum Requirements

The B.E. degree in biomedical engineering requires a minimum of 128 semester hours, distributed as follows:

1. Mathematics (17 hours): 155a–b, 175, 198, BME 260
2. Basic science (24 hours): Chemistry 102a–b, Physics 117a–b, Biosciences 110a–b.
3. Introductory engineering and computing (7 hours): ES 130, CS 101.
4. Electrical engineering (11 hours): EECE 112, 213, 235.
5. Biomedical engineering (28 hours): BME 101, 102, 210, 251, 252, 271, 255, 272, 273.
6. Biomedical engineering electives (10 hours) from an approved departmental list.
7. Program electives (7 hours): scientific and engineering courses from an approved list.
8. Humanities and social sciences (18 hours): 6 hours must be from each division; 6 hours must be above the introductory level. BME students may take either a society-technology elective or an HSS elective in the freshman year.
9. Open electives (6 hours).

Specimen Curriculum for Biomedical Engineering

		Semester hours	
		FALL	SPRING
SOPHOMORE YEAR			
BioSci 110a	Introduction to Biological Sciences	–	4
Math 175	Calculus	3	–
Math 198	Differential Equations	–	3
Phys 116b or 117b	General Physics	4	–
BME 101	Introduction to Biomechanics	3	–
EECE 112	Electrical Engineering Science	3	–
EECE 213	Network Theory II	–	4
BME 102	Biomedical Engineering Thermodynamics	–	3
	Humanities–social science elective	3	3
		16	17
JUNIOR YEAR			
EECE 235	Electronic Circuits I	4	–
BME 210	Physiological Transport Phenomena †	3	–
BME 251–252	Systems Physiology	3	3
BioSci 110b	Introduction to Biological Sciences	4	–
BME 260	Analysis of Biomedical Data	–	3
BME 271	Biomedical Instrumentation	–	4
	Biomedical Engineering or program elective *	–	4
	Open elective	3	3
		17	17
SENIOR YEAR			
BME 255W	Biomedical Engineering Laboratory	3	–
BME 272–273	Design of Medical Engineering Systems I, II	3	3
	Humanities–social science elective	3	6
	Biomedical Engineering or program elective*	6	7
		15	16

* Must be selected with approval of faculty adviser.

† Students planning to apply to medical school must take Chemistry 220a–b as a program elective in their junior year. Such students are advised to take BME 210 in the senior year in place of the BME elective.

BME 101. Biomechanics and Biomaterials. An introduction to the structure and mechanics of the musculoskeletal system and to the properties and strength of biological materials. Application of Newtonian mechanics, statics, and strength of materials to bone, muscle, tendon, other biological material, and medical devices. Credit offered for only one of BME 101, CE 180, and ME 141. Prerequisite: Physics 116a, Math 155b. [3]

BME 102. Biomedical Engineering Thermodynamics. Principles of thermodynamics and conservation of mass applied to living systems and biomedical devices. Macroscopic material balances, the first and second laws of thermodynamics, phase and chemical equilibrium, metabolic stoichiometry and energetics. Prerequisite: Chem 102a–b, Math 222, Physics 116a–b. Corequisite: Math 198. [3]

BME 210. Physiological Transport Phenomena. An introduction to the mechanics of fluids, heat transfer, and mass transfer in living systems. Basic theories of transport phenomena are presented and applied to mammalian and cellular physiology as well as to the design of medical devices. Prerequisite: BME 101, 102 or equivalent, Math 198. [3]

BME 240a–240b. Senior Research. 240a: independent research, either experimental in

nature or an in-depth literature search, under the supervision of a biomedical engineering faculty member. 240b: a continuation of the research in 240a or research in a different area of biomedical engineering. [1–3 each semester]

BME 251–252. Systems Physiology. An introduction to quantitative physiology from the engineering point of view. Descriptive physiology of several organ systems (heart, lung, kidney, nerve, blood). Mathematical modeling and computer simulation of organ systems and physiologic control mechanisms. Prerequisite: Math 198 or equivalent. [3–3]

BME 255W. Biomedical Engineering Laboratory. Laboratory experiments in biomechanics, thermodynamics, biological transport, signal analysis, biological control, and biological imaging. Emphasis is placed on current methods, instrumentation, and equipment used in biomedical engineering; on oral presentation of results; and on the writing of comprehensive reports. One lecture and one three-hour laboratory per week. Prerequisite: BME 210, 251. [3]

BME 258. Medical Imaging and Lasers. This course, aimed at engineering and physics juniors and seniors, examines the interaction of energy and tissue. Electromagnetic energies in the RF (MRI), infrared and visible (medical lasers), and Xray (Xray and CT imaging) are covered, as are mechanical energies (medical ultrasound). The mechanisms of absorption, reflection, and scattering are covered, as well as the effect of these properties on such image quality parameters as resolution, contrast, and dynamic range. Students are expected to have a working knowledge of frequency transforms, impedance, and basic electronics. [3]

BME 260. Analysis of Biomedical Data. Application of modern computing methods to the statistical analysis of biomedical data. Sampling, estimation, analysis of variance, and the principles of experimental design and clinical trials are emphasized. Prerequisite: Math 175. SPRING. [3]

BME 263. Signal Measurement and Analysis. (Also listed as EECE 263) Discrete time analysis of signals with deterministic and random properties and the effect of linear systems on these properties. Brief review of relevant topics in probability and statistics and introduction to random processes. Discrete Fourier transforms, harmonic and correlation analysis, and signal modeling. Implementation of these techniques on a computer is required. Prerequisite: Probability and Statistics. FALL. [3]

BME 271. Biomedical Instrumentation. Introduces methods used to determine physiological functions and variables from the point of view of optimization in the time and frequency domain and the relation to physiological variability. Laboratory exercises stress instrumentation usage and data analysis. Three lectures and one laboratory. SPRING. [4]

BME 272–273. Design of Biomedical Engineering Devices and Systems I and II. An integration of the engineering and life science backgrounds of senior biomedical engineering students through the presentation of design principles for medical devices and systems. Design principles and case examples for biomedical electronics, mechanical, chemical, and computing systems are presented. A full-semester design project is required. Evaluation is conducted through periodic oral and written presentations, and through a final written and poster report. Prerequisite: BME 271, 251, 252. [3]

BME 281. Biotechnology. Integration of process bioengineering with cellular and molecular biology to describe the manufacture of products derived from mammalian cells. Optimization of oxygen transport and fluid shear stress in bioreactor design for mammalian cells. Biotechnology ethics. Prerequisites: one year of basic biology (Biol 100 and Biol 201 or BSci 110a and BSci 110b or equivalent) and transport phenomena (BME 210 or ChE 230 or equivalent). SPRING [3] Giorgio

BME 282. Biotechnology Laboratory. Laboratory experiments in the culture of mammalian

cells in bioreactors. Measurement of cell growth and transgene protein expression as a function of bioreactor conditions. Optimization of oxygen transport and fluid shear stress in bioreactor design for mammalian cells. Co-requisites: BME 281. SPRING [1] Giorgio

BME 285. Introduction to Biomedical Optics. Fundamental concepts of optics, tissue optics and laser tissue interaction. Instrumentation for light and laser applications. Current applications of light and lasers for diagnosis and therapy in biomedicine. Prerequisite: Senior standing or consent of instructor. Alternating FALL and SPRING [3], Jansen, Mahadevan-Jansen

BME 286. Biomedical Optics Laboratory. Practical experience in basics of operating lasers, using optics, fiberoptics and interferometry. Computer-aided design of optical system and computer simulations of light tissue interaction. Application of optical concepts to biomedical problems. Prerequisites: Senior standing or consent of instructor BME 286 a co-requisite. Alternating FALL and SPRING [1], Jansen, Mahadevan-Jansen

BME 290a–b–c–d. Special Topics in Biomedical Engineering. Different topics taught as a–d. [3] (Offered periodically)

BME 312. Advanced Biomedical Instrumentation. A study of the scientific bases and design strategies for advanced medical instrumentation systems. Measurements and diagnosis systems for biomechanical, biochemical, cardiovascular, radiographic and bioelectric phenomena are discussed. Prerequisite: BME 270 or consent of instructor. SPRING. [3]

BME 313. Advanced Biomechanics. Application of advanced concepts in statics, dynamics, continuum mechanics, and strength of materials to biological systems. Topics include measurement of mechanical properties of biological materials; rheological properties of blood; mechanics of cells, bone, skeletal muscle, and soft tissue; normal and abnormal dynamics of human movement; mechanics of articular joint movement; pulmonary mechanics; cardiac mechanics; arterial mechanics; mechanics of veins and collapsible vessels; and mechanics of flow in the microcirculation. Prerequisite: 101, 210 or equivalent. [3]

BME 314. Bioelectric Signal Processing. Study of the analysis of signals generated by excitable tissues; electrocardiograms, electromyograms, electroencephalograms, and others. Course integrates physiological knowledge with an emphasis on mechanisms of signal generation, information in waveforms useful for physiologic investigation and medical diagnosis, and processing methodologies for automatically determining this information. Prerequisite: 252 or equivalent, 263. [3]

BME 315. Dynamics of Physiological Systems. Course begins with overview of linear representations of cardiovascular systems and introduction to rudimentary aspects of physiologic control. Attention will then concentrate on topics relating to physiological systems identification. Format will be didactic in part, supplemented by seminar presentations, literature review, and computational problems. Prerequisite: knowledge of Laplace and Fourier Transform methods; 252 or equivalent desired. FALL. [3]

BME 316. Medical Imaging. A survey of medical imaging modalities and applications. Emphasis is on image formation and image analysis. Prerequisite: graduate standing, Physics 116a–b, Math 194, EECE 200, or equivalents. SPRING. [3] (Offered alternate years)

BME 317. Physiological Transport Phenomena. (Also listed as ChE 317) The quantitative description of momentum transport (viscous flow) and mass transport (convection and diffusion) in living systems. Prerequisite: 230 or equivalent courses in fluid dynamics and mass transfer. SPRING. [3]

BME 318. Principles and Applications of Magnetic Resonance Imaging. Physics and engineering of magnetic resonance imaging with an introduction to biomedical applications of MRI. Topics include signal generation, spatial localization, pulse sequence design, Fourier trans-

form reconstructions, image processing, instrumentation, artifacts, MR angiography, cardiac MR, and echo planar imaging. Prerequisite: Physics 116a–b and Math 198, or equivalents; Math 194 or equivalent recommended. FALL (alternate years) [3] Paschal.

BME 319. Engineering Models of Cellular Phenomena. Application of engineering methods to model and quantify aspects of cell physiology. Topics include receptor mediated cell processes, cell-cell signaling, cooperative barrier behavior, cell structural components, and cell motility. SPRING. [3] (Offered 1998/1999 and alternate years)

BME 320. Laser-Tissue Interaction and Therapeutic Use of Lasers. Optical and thermal aspects and models of the interaction between laser/light and biological tissue as it is used for therapeutic applications in medicine and biology. Issues and objectives in therapeutic and surgical applications of lasers, overview of state-of-the-art topics and current research. FALL. [3] Jansen

BME 321. Optical Diagnosis: Principles and Applications. Applications of light and tissue optical properties for the diagnosis of tissue pathology. Basic scientific and engineering principles for developing techniques and devices that use light to probe cells and tissues. Recent applications of different optical diagnostic techniques. SPRING. [3] Mahadevan-Jansen.

BME 350. Neural Networks. (Also listed as EECE 350) Theory and application of parallel distributed processing networks. Basic neurobiology, biophysics of active membranes, neural network architectures, training algorithms, optimization, hardware applications. A network applications project is required. SPRING. [3]

BME 369. Master's Research.

BME 391–392–393–394. Biomedical Research Seminar. [1–1–1–1]

BME 395a–b–c–d. Special Topics. Different topics taught as a–d graduate level. [1–3]

BME 399. Dissertation Research.

Chemical Engineering

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I CHEMICAL engineering is almost unique among the engineering disciplines in that it is based on chemistry as well as physics and mathematics. From its early foundation in petrochemical and bulk chemical processing, chemical engineering has expanded to play key roles in the development and

production of pharmaceuticals and bioengineered materials, specialty polymers and high strength composites, semiconductors and microelectronic devices, a wide range of ultrapure fine chemicals, and so forth. Indeed, chemical engineering is essential for the operation of contemporary society. The solution of many of the problems facing society today—e.g., energy, the environment, development of high-performance materials—will involve chemical engineers. Future opportunities in the field are very bright.

The undergraduate program in chemical engineering equips students to contribute to the solution of these and similar problems. Most graduates find meaningful careers in industry. Others are attracted to government laboratories, universities, and careers as private consultants. Some continue their education through graduate studies in chemical engineering, business, law, or medicine.

Degree Programs. The Chemical Engineering Department offers the Bachelor of Engineering degree and graduate study leading to the M.Eng., M.S., and Ph.D. degrees.

Undergraduate chemical engineering students acquire a solid background in mathematics, chemistry, and physics and take additional upper-level courses in chemistry. The chemical engineering program has as its basis courses in transport phenomena, thermodynamics, separations, and kinetics. Other courses deal with the principles and techniques of chemical engineering analysis and design, along with economic analysis and process control. Laboratory courses offer the student an opportunity to make fundamental measurements of momentum, heat, and mass transport and to gain hands-on experience with bench scale and small scale pilot-plant apparatus, which can be computer controlled. Report writing is a principal focus in the laboratory courses. Selected students are offered the opportunity to carry out individual research projects. A specimen curriculum for a chemical engineering major, which shows required and elective courses for the standard program, follows.

This standard program includes a number of electives. Students, with the consent of their faculty advisers, may choose elective courses that maintain program breadth or may develop a special-interest minor program within the chemical engineering major. Established minors for chemical engineering students are environmental engineering, materials science and engineering, and management of technology. Double majors may be arranged in consultation with a faculty adviser.

Undergraduate Honors Program. The professional honors program in chemical engineering provides an opportunity for selected students to develop individually through independent study and research. General requirements are described in the Special Programs chapter. Acceptance to the program is made at the beginning of, or during, the junior year. Transfer students meeting other requirements may be considered for admission after completing one semester at Vanderbilt. Candidates for honors choose their technical courses with the consent of a faculty honors adviser. These may be selected to obtain additional depth in chemical engineering by taking at least 6 hours of 300-level courses or by concentrating in an allied area with graduate courses recommended but not required. Candidates also take 16 hours of

humanities–social science electives and 12 hours of technical electives. A special research project is substituted for ChE 229W in the senior year. A formal written research report is submitted each semester of the senior year.

Facilities. The Chemical Engineering Department is located in Olin Hall of Engineering. Departmental laboratories are equipped for study of transport phenomena, unit operations, kinetics, and process control. Current research areas for which facilities are available include adsorption and surface chemistry; biochemical engineering and biotechnology; chemical reaction engineering; environment, including air pollution; materials; process modeling and control.

Computers. A computer facility located in Olin Hall is used in undergraduate and graduate instruction and research. This equipment provides the Chemical Engineering Department with the opportunity to use computer-aided design techniques and computer control of processes. The department makes a special effort to employ microcomputers for use in homework, design problems, and laboratory studies. Microcomputers are available in the Olin Hall computer center. Engineering workstations are also available.

Curriculum Requirements

The B.E. degree in chemical engineering requires a minimum of 128 hours course credit. The courses and credits are distributed as follows:

1. Mathematics (17 hours). Required courses: Math 155a, 155b, 175, 198. Math elective: one course selected from Math 194, 218, 226, 229, 234, 261, or 286.

2. Basic Science (31 hours). Required courses: Chemistry 102a, 102b, 220a, 220b, 230, 231, 236; Physics 116a, 116b or 117a, 117b.

3. Engineering Science (13 hours). Required courses: ES 130; CS 101; EECE 200 or EECE 116 (EECE 112 may be substituted with consent of adviser); ME 141.

4. Humanities–Social Sciences (18 hours). To be selected from the approved lists (see Distribution Requirements). At least 6 hours of advanced level courses must be included. Three of the 18 hours may be a Technology Society elective. Eligible for pass-fail credit.

5. Technical electives (6 hours). To be selected from any technical or scientific field with approval of the faculty adviser. A number of technical elective courses in Chemical Engineering will be available to advanced undergraduate students each year. Technical electives may be eligible for pass-fail credit.

6. Open electives (6 hours). To be selected with approval of the faculty adviser. Eligible for pass-fail credit.

7. Chemical Engineering required courses (37 hours) ChE 151, 152, 216, 223, 225, 228W, 229W, 230, 231, 232, 233W, 242.

Minor Programs

Minor programs require a minimum of 15 semester hours or five 3-unit courses. Students who want to pursue one of the approved chemical engineering minor programs fit course requirements for the minor into the elective slots of their standard program. Minor programs for chemical engineering students are described below.

Environmental Engineering. CE 211 and CE/ChE 280, along with three elective courses for the minor (see page 467) A list of recommended courses is available from the department. EECE 200 or equivalent is not required for students who select the Environmental Engineering minor.

Materials Science and Engineering. MSE 150 and MSE 250, along with three courses selected from ME 205, MSE 246, 251, 252, 256, and EECE 281, 283, 284. A maximum of two of the last three courses may be applied to the minor.

Management of Technology. MT 214 and MT 215, along with three courses selected from MT 216, 227, 230, 231, 246, 275.

All elective courses selected must be approved by the student's adviser so that the entire program satisfies the ABET (Accreditation Board for Engineering and Technology) accreditation criteria.

Specimen Curriculum for Chemical Engineering †

		Semester hours	
		FALL	SPRING
SOPHOMORE YEAR			
Chem 219a–b	Organic Chemistry Laboratory	1	1
Chem 220a–b	Organic Chemistry	3	3
Math 175	Analytic Geometry and Calculus	3	–
Math 198	Elementary Differential Equations	–	3
Physics 116b			
or 117b	General Physics	4	–
ChE 151	Chemical Process Principles I	3	–
ChE 152	Chemical Process Principles II	–	3
ME 141	Statics-Dynamics	–	3
	Humanities–social science elective	3	3
		17	16

JUNIOR YEAR		FALL	SPRING
Chem 230–231	Physical Chemistry I, II	3	3
Chem 236	Physical Chemistry I Laboratory	1	–
ChE 223	Chemical and Phase Equilibria	3	–
ChE 228W	Chemical Engineering Laboratory I	–	3
ChE 230	Introductory Transport Phenomena	3	–
ChE 231	Rate-Based Transport Operations	–	3
ChE 232	Separation Processes	–	3
EECE 200	Elements of Electrical Engineering	–	3
or EECE 116	Digital Logic ††	–	3
	Mathematics elective *	3	–
	Humanities–social science elective	3	–
	Technical elective	–	3
		16	18
SENIOR YEAR			
ChE 216	Engineering Economy	3	–
ChE 225	Kinetics	3	–
ChE 229W	Chemical Engineering Laboratory II	3	–
ChE 233W	Chemical Engineering Process Design	–	4
ChE 242	Chemical Process Control	–	3
	Humanities–social science elective	3	–
	Humanities–social science or technology–society elective	–	3
	Technical elective	–	3
	Open electives	3	3
		15	16

* To be selected from curriculum requirements list above.

† Specified courses are required for the standard program.

†† ECE 112 (Electrical Engineering Science) may be substituted with consent of the adviser.

ChE 151. Chemical Process Principles I. A foundation for advanced work in chemical engineering. Process problems of a chemical and physico-chemical nature are considered. Emphasis is on material balance and stoichiometry required for design computation. FALL. [3]

ChE 152. Chemical Process Principles II. Application of engineering principles to the analysis and design of chemical processes. A continuation of ChE 151, with emphasis on energy balances, unsteady-state processes, and the use of computers in process analysis and simulation. Prerequisite: 151. SPRING. [3]

ChE 216. Engineering Economy. (Also listed as CE 216 and MT 216) Economic evaluation and comparison of alternatives, interest, periodic payments, depreciation, criteria, and analytical procedures in investment decision-making, plant feasibility, and cost estimating for design. FALL. [3]

ChE 223. Chemical and Phase Equilibria. Thermodynamic basis and use of chemical and phase equilibrium data and correlations to design chemical processes. Applications to processes of chemical conversion and physical separations involving gases, liquids, and solids. Corequisite: Chem 230. Prerequisite: Chem 230. FALL. [3]

ChE 225. Kinetics. Analysis of chemical kinetic data and application to the design of chemical reactors. Batch, semibatch, and flow reactors are considered in both steady-state and transient operation. A brief treatment of catalysis and physical and chemical adsorption is given. Prerequisite: Chem 231 and ChE 223. Graduate credit for non-majors. FALL. [3]

ChE 228W–229W. Chemical Engineering Laboratory I, II. Laboratory experiments in momentum, energy, mass transport, kinetics, process dynamics, and control. Interpretation of data for equipment and process design. Writing and oral presentations are emphasized. A technical communications professor provides instruction in written and oral communications. One lecture and one 5-hour laboratory. Prerequisite: 230. Sequence begins in SPRING. [3–3]

ChE 230. Introductory Transport Phenomena. The principles of mass, momentum, and energy transport and their application to analysis and design of engineering systems. Graduate credit for non-majors. Prerequisite: junior standing or consent of instructor. Corequisite: Math 198. FALL. [3]

ChE 231. Rate-Based Transport Operations. Principles and techniques of chemical engineering practice and design. Analysis of chemical engineering processes involving mass transfer, heat transfer, and fluid mechanics. Consideration of safety in the context of process equipment design. Prerequisite: ChE 230 or consent of instructor. SPRING. [3]

ChE 232. Separation Processes. Chemical engineering design and practice of chemical separation processes which reach or approach equilibrium. These processes include distillation, adsorption, and extraction. Process simulation of separation processes is required. Consideration of safety and economics in the context of process and equipment design. Prerequisite: ChE 230 or consent of instructor. SPRING [3]

ChE 233W. Chemical Engineering Process Design. A capstone design course for chemical engineering students. A systematic approach to design and safety practices for chemical process operations. The course involves process design, economic evaluation of alternatives, and a cost and safety analysis of a typical chemical or petroleum process. The use of process simulations is required. A comprehensive design report is required. Prerequisite: 232 and 216 or consent of instructor. SPRING [4]

ChE 242. Chemical Process Control. Design of control systems for chemical processes. Principles of process dynamics and control of single and multivariable systems. Frequency and stability analyses and their effect on controller design. Graduate credit for non-majors. Prerequisite: Math 198. SPRING. [3]

ChE 246–247. Chemical Engineering Projects. Opportunities for individual students to do research or design work under guidance of a faculty member. Requires faculty sponsorship of the project. [Variable credit: 1–3 each semester]

ChE 249. Seminar. SPRING. [1]

ChE 280. Atmospheric Pollution. (Also listed as CE 280) Fundamentals of atmospheric pollution and control. The sources and nature of gaseous and particulate air pollutants, the relation of meteorological conditions to their dispersal, and their effects on health and materials are discussed along with administration, standards, and control of air pollution. Prerequisite: junior standing. SPRING. [3]

ChE 282. Biochemical Engineering. A course in enzyme catalysis, microbial growth, bioreactor design and analysis and product recovery. Emphasis will be placed on enzyme kinetics and fermentation process modeling, applications to models of commercial fermentations, biomass plants, and enzyme engineering. For graduate students and advanced undergraduates. Prerequisite: consent of instructor [3] (Offered on demand)

ChE 290. Special Topics in Chemical Engineering. Prerequisite: consent of instructor. [3] (Offered on demand)

ChE 310a. Applied Mathematics in Chemical Engineering I. Chemical engineering applications of advanced mathematical methods such as Laplace transforms, calculus of finite differences, and numerical methods, with emphasis on expressing physical situations in mathematical language together with methods used in analysis of experimental data. FALL. [3]

ChE 310b. Applied Mathematics in Chemical Engineering II. A continuation of 310a. [3]

ChE 311a. Advanced Chemical Engineering Thermodynamics I. Application of the thermodynamics method to chemical engineering problems. Development of the first, second, and third laws of thermodynamics; estimation and correlation of thermodynamic properties; chemical and phase equilibria; irreversible thermodynamics; and other special advanced topics relevant to chemical engineering. SPRING. [3]

ChE 311b. Advanced Chemical Engineering Thermodynamics II. A continuation of 311a. [3] (Offered on demand)

ChE 312a. Transport Phenomena I. The theory of non-equilibrium processes. Development of the analogy between momentum, energy, and mass transport with applications to many common engineering problems. SPRING. [3]

ChE 312b. Transport Phenomena II. A continuation of 312a. [3] (Offered on demand)

ChE 313. Applied Chemical Kinetics. Experimental methods in kinetics. Kinetics of industrial reactions and reactor design. Absorption and catalytic systems are considered. FALL. [3]

ChE 314. Stagewise Operations. Stagewise operations such as distillation, absorption, and extraction with special emphasis on multicomponent systems. SPRING. [3]

ChE 315a–315b. Systems Analysis for Process Design and Control. The design and control of chemical process plants, including economic optimization under steady state and transient conditions. FALL–SPRING. [3–3]

ChE 316. Differential Operations. An advanced treatment of differential mass transfer and diffusional processes. [3] (Offered on demand)

ChE 317. Physiological Transport Phenomena. (Also listed as BME 317) The quantitative description of momentum transport (convection and diffusion) in living systems. Prerequisite: courses in fluid dynamics and mass transfer. SPRING. [3]

ChE 320. Surfaces and Adsorption. Surface energy, capillarity, contact angles and wetting, surface films, insoluble monolayers, solid surfaces, membranes, surface area determination, adsorption, adhesion, interface thermodynamics, friction and lubrication, interface in composites, relationships of surface to bulk properties of materials. FALL. [3]

ChE 325. Polymer Science and Engineering. Macromolecular systems with emphasis on the interrelationship of chemical, physical, and engineering properties and the further relation of these properties to synthesis and application. A basic understanding of organic and of physical chemistry is assumed. SPRING. [3]

ChE 334. Advanced Reaction Kinetics. The optimum design of chemical reactors and modern topics in engineering kinetics. [3] (Offered on demand)

ChE 352. Advanced Physical/Chemical Waste Treatment. (Also listed as EWRE 352.) The theory of mass transfer and chemical reactor technology in advanced wastewater treatment design; physical/chemical processes in municipal and industrial wastewater treatment; evaluation of process alternatives for cost effectiveness. Prerequisite: CE 211, Water and Waste Water Treatment, or consent of instructors. SPRING. [3] (Offered on demand)

ChE 369. Master's Thesis Research.

ChE 389. Master of Engineering Project

ChE 397. Special Topics. [3]

ChE 398. Seminar. [0]

ChE 399. Ph.D. Dissertation Research.

Civil Engineering

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ADJUNCT INSTRUCTOR Charles S. Higgins

I VANDERBILT'S Department of Civil Engineering attempts to go beyond technical competence to develop leaders in the fields of consulting, industry, business, law, government, and research. Civil engineers must be able to face complex problems of modern society involving the development of physical facilities that serve the public while protecting the environment and preserving social values. Challenges facing civil and environmental engineers concern housing, urban transportation, pollution control, water resources development, industrial development, repairing our nation's decaying infrastructure, and exploring space. Addressing these challenges with today's limited resources requires innovative and original ideas from highly-trained engineers.

Undergraduates majoring in civil engineering receive a strong background in mathematics, science, engineering science, and engineering design. The program also includes courses in economics, humanities, social sciences, resources management, and public policy. Students participate in design teams and laboratory studies as well as classroom activities and become proficient in the use of computers for problem solving and design.

Degree Programs. At the undergraduate level, the Department of Civil Engineering offers the B.E. degree in civil engineering. The curriculum includes upper-level analysis and design courses in structural, geotechnical, en-

vironmental, water resources, and transportation engineering. In addition, a major in chemical engineering with a minor in environmental engineering is available.

Vanderbilt's B.E. degree in civil engineering prepares students for entry-level positions in many specialty areas of civil engineering, as well as many other types of careers, such as business, construction, and law. Today, however, and even more so in the future, professional practice at a high level will require an advanced degree. We recommend that students seriously consider pursuing the M.S. or M.Eng. degree soon after obtaining the B.E. degree.

At the graduate level, the program in civil engineering offers the M.S. degree in the areas of structural engineering and mechanics and transportation engineering. Graduate study leading to the Ph.D. in structural engineering and transportation engineering is also available.

The graduate program in Environmental Engineering offers the M.S. and Ph.D. degrees in the areas of environmental engineering and environmental science. Both thesis and non-thesis options are available at the M.S. level.

The graduate programs in both civil engineering and environmental engineering also offer the Master of Engineering degree, an advanced professional degree especially designed for practicing engineers wanting to pursue post-baccalaureate study on a part-time basis.

Undergraduate Honors Program. Juniors and seniors with averages better than 3.2 may apply for the Honors Program. If accepted, they will be expected to participate in a research project or develop one of their own with faculty guidance. If necessary, they may receive variances from certain curriculum requirements to take courses more appropriate to their needs.

Facilities. The structural laboratory contains static and dynamic testing equipment with associated instrumentation for research. The transportation laboratory is computer-oriented, with emphasis on mainframe and microcomputer database management and systems evaluation. The latest equipment for measuring traffic and aircraft noise is also available. The undergraduate soil mechanics laboratory is equipped to perform studies on the engineering properties of soils.

The newly renovated environmental laboratories are fully supplied with modern equipment for chemical, physical, and biological analysis of water, wastewater, air, and solid waste. They include equipment for the study of biological waste treatment, physical-chemical waste treatment, sludge conditioning and filtration, gas stripping, disinfection, and other processes. The hydraulics laboratory includes several glass-walled flumes and tanks, measuring and weighing tanks, model pumps and turbines, automatic measuring and recording equipment, and other devices. All are available for student use in courses, demonstrations, and research. The computation laboratory includes several remote terminals for access to the time-sharing digital computer system, and a variety of microcomputers are available for work on student projects.

Curriculum Requirements

The B.E. degree in civil engineering requires a minimum of 128 hours, distributed as follows:

1. Mathematics (14 hours). Required courses: 155a–155b, 175, 198. (Qualified students may substitute an honors mathematics sequence.)
2. Basic science (16 hours). Required courses: Chemistry 102a and either Chemistry 102b or MSE 150; Physics 116a–116b.
3. Computing (3 hours). Required course: CS 101 or CS 102.
4. Engineering fundamentals (31 hours). Required courses (25 hours): ES 130; CE 180, 182, 195, 203, 205; ME 190; MSE 232, and 3 hours from CS 255, 257, Math 194, 234, or CE 207. Electives (6 hours): to be selected from CS 201; BME 102, 260; ChE 151, 152, 225, 230; CE 231, 271, 272, 273, 276; EECE 200 or 112; ME 220a–220b, 234, 259, 248; MSE 150, 250, 251. (EECE 200 and ME 220a will aid in preparation for the fundamentals of engineering exam.)
5. Humanities and Social Science Electives. Fifteen or more hours of 100- or 200-level courses, as specified by the program, are to be selected with the consent of the student's adviser. (See Distribution Requirements listed in the *Degree Programs in Engineering* chapter.) It is required that 6 or more hours be in each division, and that at least 6 hours be in courses above the introductory level. Economics 100 (Introductory Economics: The Price System and Business Fluctuations) is strongly recommended for all students after the freshman year.
6. Open electives (6 hours).
7. Technology-society elective (3 hours). (See Distribution Requirements in the Degree Programs in Engineering chapter.)
8. Technical electives (6 hours). To be selected from the following list of technical and scientific subjects: (a) all courses in BME, ChE, CE, ENVE, CS, EE, ME, MSE and MT 215, 216, 242, 246, 265, 274; (b) Chemistry 102b and all chemistry courses at or above 200 and mathematics courses at or above Math 194; (c) all biology department courses above 115; (d) all geology courses except 100, 104, 106, 115, and 150; (e) all physics and astronomy courses above 130.
9. Professional depth, breadth, and design (34 hours). Students must select courses in each of the five areas of civil engineering listed below. To gain depth and expertise, they must choose at least 12 hours from their area of concentration and at least 6 hours from another area; to provide breadth, they must choose a minimum of 3 hours in each of the three other areas and one more CE course from the lists below. Core courses in each area are listed first, with auxiliary courses in parentheses. Auxiliary courses may be used to satisfy the area of concentration option, but may not be used for the 6-hour and 3-hour requirements. Courses forming the core of the design component for each area are indicated by an asterisk and must be included in the 15-hour concentration

option. Each student must pass 16 hours of course work labeled design on the department course checklist.

Structural. CE 230, 231, 233*, 234*, 293, 294, 295 (CE 285, 286).

Geotechnical. CE 243, 285*, 286* (CE 212, 230, 234, 276).

Environmental. CE 210*, 211*, 280, (CE 212, 258, 260, 269, 271, 276, 275 or 279).

Water Resources. CE 212*, 276* (CE 210, 269, 271, 279).

Transportation. CE 225, 255*, 256*, 257* (CE 210, 258, 280, 285).

CE 180, 182, 203, 225, 230, and 243 are fundamental prerequisites for other courses and should be carefully scheduled to allow proper course sequences.

In addition, all students must complete CE 206a–b, a major meaningful and comprehensive project design course. Students are responsible for obtaining a course checklist from the departmental administrative assistant in room 104, placing it in their departmental file, and updating it each semester with their faculty adviser. This list must be kept up to date, with all variances documented in writing, because it will be used to determine eligibility for graduation. A student must submit a completed checklist to the department chair by 15 March in order to qualify for May graduation.

Specimen Curriculum for Civil Engineering with a Concentration in Environmental Engineering

		Semester hours	
		FALL	SPRING
SOPHOMORE YEAR			
Math 175	Analytic Geometry and Calculus	3	–
Physics 116b	General Physics	4	–
CE 180	Statics	3	–
ChE 151	Chemical Process Principles I (EF elective)	3	–
	Humanities–social science elective	3	–
CE 195	Computer-Aided Civil Engineering	–	3
Math 198	Elementary Differential Equations	–	3
ME 190	Dynamics	–	3
CE 182	Mechanics of Materials	–	3
Econ 100	Introductory Economics (hum–soc sci elective)	–	3
		16	15
JUNIOR YEAR			
CE 203	Fluid Mechanics	3	–
CE 225	Transportation Systems Engineering	3	–
CE 243	Soil Mechanics	3	–
CE 211	Water and Wastewater Treatment	3	–
CE 230	Statically Determinate Structures	3	–
MSE 232	Strength and Structure of Engineering Materials	1	–
	Open elective	–	3
	Humanities-social science electives	–	6
CE 205W	CE Laboratory	–	3
CE 272	Microbiology (tech elective)	–	3
CE 210	Water Supply and Wastewater Collection	–	3
		16	18
SENIOR YEAR		FALL	SPRING

CE 206a–b	Civil Engineering Design I, II	2	2
CE 212	Hydrology	3	–
CE 271	Environmental Chemistry (EF elective)	3	–
CE 280	Atmospheric Pollution	–	3
	Humanities–social science elective	3	–
CE 207	Probabilistic Methods in Design (EF elective)	3	–
	Open elective	3	–
CE 276	Groundwater Hydrology	–	3
CE 273	Environmental Engineering Lab (tech elective)	–	3
CE 260	Solid Waste Management	–	3
CE 269	Radiological Aspects of Environmental Engineering	–	3
		17	17

Specimen Curriculum for Civil Engineering with a Concentration in Transportation Engineering

		Semester hours	
		FALL	SPRING
SOPHOMORE YEAR			
Math 175	Analytic Geometry and Calculus	3	–
Physics 116b	General Physics	4	–
CE 180	Statics	3	–
Econ 100	Introductory Economics (hum–soc sci elective)	3	–
	Humanities–social science elective	3	–
CE 182	Mechanics of Materials	–	3
CE 195	Computer-Aided Civil Engineering	–	3
Math 198	Elementary Differential Equations	–	3
ME 190	Dynamics	–	3
CE 160	Plane and Route Surveying (tech elective)	–	3
		16	15
JUNIOR YEAR			
MSE 232	Strength and Structure of Engineering Materials	1	–
CE 203	Fluid Mechanics	3	–
CE 230	Statically Determinate Structures	3	–
CE 225	Transportation Systems Engineering	3	–
CE 243	Soil Mechanics	3	–
	Humanities–social science electives	–	6
CE 255	Transportation System Design	–	3
	Engineering fundamentals electives	–	6
CE 207	Probabilistic Methods in Engineering Design (Engineering Fundamentals elective)	3	–
CE 205W	CE Laboratory	–	3
		16	18
SENIOR YEAR			
CE 206a–b	Civil Engineering Design I, II	2	2
CE 212	Hydrology	3	–
CE 257	Traffic Engineering	3	–
CE 258	Environmental Analysis of Transportation Systems	3	–
	Humanities–social science elective	–	3
	Technical elective	3	–
	Open electives	3	3
CE 285 or 233	Foundation Analysis	–	3
CE 256	Steel Design	–	3
	Urban Transportation Planning	–	3

CE 210	Water Supply and Wastewater Collection	–	3
		<u>17</u>	<u>17</u>

Specimen Curriculum for Civil Engineering with a Concentration in Structural Engineering

		Semester hours	
		FALL	SPRING
SOPHOMORE YEAR			
Math 175	Analytic Geometry and Calculus	3	–
Physics 116b	General Physics	4	–
CE 180	Statics	3	–
	Humanities–social science elective	3	–
	Engineering fundamentals elective	3	–
CE 195	Computer-Aided Civil Engineering	–	3
Math 198	Elementary Differential Equations	–	3
ME 190	Dynamics	–	3
CE 182	Mechanics of Materials	–	3
CE 160	Plane and Route Surveying (tech elective)	–	3
		<u>16</u>	<u>15</u>
JUNIOR YEAR			
Math 194	Matrices and Linear Systems (eng. fund. elective)	3	–
CE 203	Fluid Mechanics	3	–
CE 230	Statically Determinate Structures	3	–
CE 243	Soil Mechanics	3	–
CE 225	Transportation Systems Engineering	3	–
MSE 232	Strength and Structure of Engineering Materials	1	–
	Humanities–social science electives	–	6
CE 205W	CE Laboratory	–	3
CE 231	Statically Indeterminate Structures	–	3
CE 233	Introduction to Structural Steel Design	–	3
CE 285	Foundation Analysis and Design	–	3
		<u>16</u>	<u>18</u>
SENIOR YEAR			
CE 206a–b	Civil Engineering Design I, II	2	2
CE 212	Hydrology	3	–
CE 234	Intro to Reinforced Concrete Design	3	–
CE 293	Advanced Structural Steel Design	3	–
	Technical elective	3	–
	Open electives	3	3
	Humanities–social science electives	–	6
CE 210	Water Supply and Wastewater Collection	–	3
	EF elective	–	3
		<u>17</u>	<u>17</u>

Minor in Environmental Engineering.

A minor in environmental engineering is available to all students. It requires 15 hours of environmental engineering, 6 hours of required courses and 9 hours of electives, chosen from the following list:

Required Courses (6 hours)

CE 211 – Water and Wastewater Treatment and

CE 271 – Environmental Chemistry *or*

CE/ChE 280 – Atmospheric Pollution (ChE 280 is required for Chemical Engineers)

Elective Courses (9 hours)

CE 210 – Water Supply and Wastewater Collection

CE 272 – Environmental Microbiology

CE 212 – Hydrology

CE 276 – Groundwater Hydrology

CE 260 – Solid Waste Management

CE 269 – Radiological Aspects of Environmental Engineering

CE 271 – Environmental Chemistry

CE 273.– Environmental Engineering Laboratory

ChE 280 – Atmospheric Pollution

Civil Engineering

CE 160. Plane and Route Surveying. Introduction to basic surveying equipment. A study of traverse, topographic, route, and construction surveys; analysis and presentation of results of surveys; precision and error analysis. Two lectures and one laboratory. SPRING. [3]

CE 180. Statics. The elements of statics with application to systems of forces in two and three dimensions (particles and rigid bodies), resultants, equivalent systems, and equilibria. Vector notation is introduced. Friction. Credit is offered for only one of CE 180, ME 141, and BME 101. Corequisite: Math 155b. FALL, SPRING, SUMMER. [3]

CE 182. Mechanics of Materials. Stress and strain; tension, compression, and shear; Hooke's law, Mohr's circle, combined stresses, strain-energy. Beams, columns, shafts, and continuous beams. Deflections, shear and moment diagrams. Prerequisite: CE 180 or ME 141. FALL, SPRING, SUMMER. [3]

CE 195. Computer-Aided Civil Engineering. Introduction to quantitative and graphical tools in solving civil engineering problems. Computer-aided graphics including projection methods, three-dimensional modeling, sections and contours, and design drawings. Numerical techniques including statistical methods, linear regression, matrices, linear and nonlinear equation solving, and optimization techniques. Laboratory, case studies and term projects using existing software packages. Prerequisite: CS 101 or 102; ES 130. SPRING. [3]

CE 200a–200b–200c. Directed Study. Directed individual study of a pertinent topic in civil and environmental engineering. May include literature review and analysis, analytical investigations, and/or experimental work. Prerequisite: junior standing, completion of two CE courses, and one-page proposal approved by supervising faculty member and chair. FALL, SPRING, SUMMER. [Variable credit: 1–3 each semester]

CE 203. Fluid Mechanics. (Also listed as ME 224) Physical properties of fluids, fluid statics; equations of conservation of mass, energy, and momentum; dimensional analysis and similarity; principles of real fluid flows: boundary layer effects, flow through pipes, flow in open channels, drag forces on bodies. Prerequisite: CE 180 or ME 141; ME 190; Math 198. Graduate credit for students in geology. FALL, SUMMER. [3]

CE 205W. Civil and Environmental Engineering Laboratory. A course integrating (1) experimental projects in fluid mechanics, soil mechanics, and structures and (2) principles of technical communication, applied to relevant memos, proposals, descriptions, and reports. Satisfies the writing course requirement in the CE curriculum. Prerequisite: CE 203 or ME 224; CE 230, 243. SPRING. [3]

CE 206a. Civil Engineering Design I. A meaningful, major engineering design course for civil engineering students. Includes a response to request(s) for proposals, project conception, project design, design analysis, and economic evaluation of alternatives for typical civil engineering projects within selected areas of professional depth. Includes consideration of safety, reliability, aesthetics, ethics, social and environmental impact, and government regulations. Prerequisite: CE 205W, senior standing, or consent of instructor. FALL [2]

CE 206b. Civil Engineering Design II. A continuation of CE 206a. The course involves an oral presentation and the submittal of a final design report. Prerequisite: CE 206a. SPRING [2]

CE 207. Introduction to Probabilistic Methods in Engineering Design. Applications of probability and statistics to engineering problems. Review of basic probability concepts, random variables, probability distributions, estimation of distribution parameters (point estimation and confidence intervals), determination of distribution models, hypothesis testing, correlation and regression analysis, Monte Carlo simulation, and probabilistic design. Prerequisite: Math 170b or Math 175, and ES 130. FALL. [3]

CE 208. Issues in Professional Engineering Practice. The study of a variety of issues in professional engineering practice, including ethics, professionalism, professional practice, marketing of engineering services, quality-based selection, project management, personnel management, value engineering, liability insurance, and loss prevention. Prerequisite: senior standing. SPRING. [3]

CE 210. Water Supply and Wastewater Collection. Hydrologic consideration of surface and ground water sources, design of distribution systems, impoundments, and control works. Hydraulics of water supply systems and sewerage works and appurtenances. Functional design of storm and sanitary sewer systems. Prerequisite: CE 203, ME 224, or ChE 230. SPRING. [3]

CE 211. Water and Wastewater Treatment. Water quality criteria; unit operations and processes of water treatment. Chemical and biological characteristics of wastewater; unit operations and processes of waste water treatment; stream pollution. Prerequisite: junior standing or consent of instructor. FALL. [3]

CE 212. Hydrology. The hydrologic cycle, study of precipitation, evapotranspiration, stream flow, flood flow, ground water, flood routing, snowmelt, and hydrometeorology. Prerequisite: CE 203. FALL. [3]

CE 216. Engineering Economy. (Also listed as ChE 216 and MT 216) Economic evaluation and comparison of alternatives: interest, periodic payments, depreciation, criteria and analytical procedures in investment decision making, plant feasibility, and cost estimating. FALL, SPRING. [3]

CE 225. Transportation Systems Engineering. The planning, design, and implementation of transportation systems. Particular emphasis is placed upon the design process, traffic engineering, urban transportation planning, and the analysis of current transportation issues. FALL. [3]

CE 230. Introduction to Structural Analysis and Design. Principles of structural analysis and design. Analysis and design of trusses, beams, and frames using equilibrium and energy methods. Elastic deflections of trusses, beams, and frames. Prerequisite: CE 182. FALL. [3]

CE 231. Statically Indeterminate Structures. Analysis of statically indeterminate structures using compatibility methods, slope-deflection and moment distribution methods, and stiffness methods. Energy methods of analysis including virtual work, Castigliano's theorems, and minimum of total potential energy. Stability of structures and beams on elastic foundations. Prerequisite: CE 230. SPRING. [3]

CE 233. Introduction to Structural Steel Design. Design process, loading, material properties and availability. Design philosophies - ASD & LRFD; codes and specifications. Elastic, inelastic and plastic behavior and LRFD of tension, compression, flexural and axial-flexural members. Behavior and design of simple bolted and welded connections in trusses and building frames. Introduction to commercial computer software and use in steel structure design. Prerequisite: CE 230, or consent of instructor. SPRING. [3]

CE 234. Introduction to Reinforced Concrete Design. Principles of behavior and design of reinforced concrete members. Flexural and shear behavior and design. Anchorage and development of reinforcement. Serviceability requirements. Axial load and bending moment interaction and design of columns. Design of one-way slabs. Prerequisite: CE 230. FALL. [3]

CE 243. Soil Mechanics. Study of origin, formation, classification, identification, and engineering properties of soils. Discussions on index properties, soil moisture, soil structure, compressibility, shear strength, stress analysis, lateral pressures, and foundation capacities. Graduate credit for geology majors. Prerequisite: CE 182 or consent of instructor. FALL. [3]

CE 250. Principles of Water Treatment and Wastewater Disposal. Water quality criteria; unit operations and processes of water treatment. Chemical and biological characteristics of wastewater; unit operations and processes of wastewater treatment; stream pollution. Not open for credit to undergraduate engineering students or graduate students with an undergraduate degree in engineering. FALL. [3]

CE 255. Transportation System Design. Geometric analysis of transportation ways with particular emphasis on horizontal and vertical curve alignment. Design of highways, interchanges, intersections, and facilities for air, rail, and public transportation. Prerequisite: CE 225. SPRING. [3]

CE 256. Urban Transportation Planning. Analytical methods and the decision-making process. Transportation studies, travel characteristic analysis, and land-use implications are applied to surface transportation systems. Emphasis is on trip generation, trip distribution, modal split, and traffic assignment. Computerized planning programs are used. Prerequisite: CE 225. SPRING. [3]

CE 257. Traffic Engineering. Analysis of the characteristics of traffic, including the driver, vehicle, volumes, speeds, capacities, roadway conditions, and accidents. Traffic regulation, control, signing, signalization, and safety programs are also discussed. Prerequisite: CE 225. FALL. [3]

CE 258. Environmental Analysis in Transportation Systems. Assessment of environmental impacts of proposed transportation projects, including analytical modeling techniques for noise and air quality. The role of environmental analysis in the project development process, including pertinent laws and regulations, is addressed. FALL. [3]

CE 260. Solid Waste Management. An introduction to the problem of solid waste management; types and quantities of wastes; collection and transportation of wastes; composting, landfill, incineration; recycling of wastes and product recovery; resource management as a system. SPRING. [3]

CE 269. Radiological Aspects of Environmental Engineering. Characterization and detection of environmental radiation; biological effects of radiation; hazards, control, and disposal of radioactive wastes; use of radioactive tracers in environmental studies. SPRING. [3]

CE 271. Environmental Chemistry. Theoretical aspects of physical, organic, and inorganic chemistry applied to environmental engineering. Estimation of chemical parameters based on thermodynamic and structural activity relationships, kinetics of chemical reactions, equilibrium processes in the environment, including the carbonate system, metall complexation and precipitation. Prerequisite: Chem 102a and b and senior standing or consent of instructor. FALL. [3]

CE 272. Microbiology of Water, Wastewater, and Air. Principles of biology and their application to environmental science with emphasis on the microbiology of air, water, sewage, and industrial wastes. Prerequisite: junior standing or consent of instructor. SPRING. [3]

CE 273. Environmental Engineering Laboratory. An introduction to the theory and application of environmental laboratory analyses. Principles and techniques of analytical chemistry and microbiology used to determine physical, chemical, and microbiological characteristics of waters and wastewaters including titrimetry, spectrophotometry, analysis of organic mixtures, measurement of suspended solids, microscopic examination, heterotrophic plate counting, and enumeration of coliform bacteria. Prerequisite: junior standing, CE 211, 271, 272. SPRING. [3]

CE 275. Environmental Risk Management. (Also listed as MT 265). Development of environmental safety programs for technological operations. Focus on defining an environmental risk management process and program implementation, performing risk assessments, determining and selecting appropriate risk reduction strategies, and influencing risk management decisions internally and externally. Extensive use of case studies drawn from the chemical and energy-producing industries. SPRING. [3]

CE 276. Ground Water Hydrology. The occurrence and flow of ground water. Basic concepts of the effects of varying permeability and capillarity on seepage flow. Flow toward wells, through dikes, and beneath dams. Students cannot receive credit for both CE 276 and Geology 257. Prerequisite: Math 198; CE 203. SPRING. [3]

CE 279. Economics and Law of Air and Water Resources. Economics of air and water resource conservation and development, water rights, public policy and laws relating to air and water resources. Technology-society elective. SPRING. [3]

CE 280. Atmospheric Pollution. Fundamentals of atmospheric pollution and control. The sources and nature of gaseous and particulate air pollutants, the relation of meteorological conditions to their dispersal, and their effects on health and materials are discussed along with administration, standards, and control of air pollution. Prerequisite: junior standing. SPRING. [3]

CE 285. Foundation Analysis and Design. Study of shallow and deep foundation elements and systems for civil engineering structures. Prerequisite: CE 243 or equivalent. SPRING. [3]

CE 286. Earth Pressures and Retaining Structures. Study of lateral earth pressures. Analysis and design of retaining structures. Prerequisite: CE 243 or equivalent. [3] (Not currently offered)

CE 293. Advanced Structural Steel Design. Behavior, structural planning and design of steel structural systems. Design of plate girders, columns undergoing lateral-torsional and local buckling, and composite beams and columns. Highway bridge classification,

AASHTO loading, and LRFD of beam-and-slab type bridges. Plastic analysis of beams and frames. Fatigue design of tension members under cyclic loads. Design of multistory and industrial buildings including connections to transmit moment, shear and axial forces. Design of members for combined torsion and flexure - crane runway girder. Computer applications. Prerequisite: CE 233 or equivalent. FALL. [3]

CE 294. Advanced Reinforced Concrete Design. Design and behavior of two-way slab systems. Yield line theory. Shear and torsion analysis and design. Serviceability requirements and control of deflections of reinforced concrete systems. Introduction to prestressed concrete. Prerequisite: CE 234. SPRING. [3]

CE 295. Mechanics of Composite Materials. Review of constituent materials (reinforcements, matrices, and interfaces) and fabrication processes. Prediction of properties of unidirectional and short fiber materials (micromechanics). Anisotropic elasticity (derivation of Hooke's law for anisotropic materials, macromechanics of laminated composites). Analysis of laminated composites based on Classical Lamination Theory. Behavior of composite beams and plates. Special topics (creep, fracture, fatigue, impact, and environmental effects). Prerequisite: CE 182 and MSE 150. SPRING. [3]

CE 299. Special Topics. [3]

CE 301. Advanced Mechanics of Solids I. Stress and strain analysis: equilibrium, compatibility, and constitutive equations including linear elastic and thermo-elastic relations; transformations; octahedral and deviatoric stresses. Applications to the torsion of bars, stress concentrations, and semi-infinite medium problems. Euler-Bernoulli and Timoshenko beam theories. Energy and related methods including applications. Kirchoff's bending of rectangular and circular plates. Prerequisite: CE 182 or equivalent, Math 198 or equivalent, Math 194 or equivalent, or consent of instructor. FALL. [3]

CE 302. Advanced Mechanics of Solids II. Modes of failure: creep and relaxation, plastic flow, fracture and fatigue. Stability of members, frames, and plates. Membrane and bending analyses of shells, including the beam on elastic foundation analogy for cylindrical shells. Inelastic behavior and plasticity including frame, planar, axi-symmetric, and slip line problems. Prerequisite: CE 301 or consent of instructor. SPRING. [3]

CE 307. Finite Element Analysis. Discrete modeling of problems of the continua. Mathematical basis of finite element method - weighted residual and variational concepts. Finite element formulations - displacement, force, and mixed methods. One-D problems of the continua and finite element solution - Co and C1 elements, eigenvalue and transient problems. Error checks and control. Mapping, shape functions, numerical quadrature, and solution of equations. Finite element formulation of two-dimensional problems (single and multi-field) - mapping and shape functions, triangular and quad elements with straight or curved boundaries. Application problems in 1-D, 2-D and 3-D. Three-D elements, singular problems, and elements of buckling and nonlinear problems. Error estimation and quality control. Computer implementation. Commercial packages. Prerequisite: Math 194 and Math 226 or equivalent, or consent of instructor. FALL. [3]

CE 309. Structural Dynamics. Analysis of single- and multi-degree of freedom systems. Modal superposition method. Time and frequency domain analyses. Numerical methods and introduction to nonlinear dynamic analysis. Applications to structures subject to earthquake and impact forces. Prerequisite: CE 301 or consent of instructor. SPRING. [3]

CE 310. Probabilistic Methods in Engineering Design. (Also listed as MT 312) Applications of probabilistic methods in the analysis and synthesis of engineering systems. Review of basic probability concepts, random variables and distributions, modeling and quantifica-

tion of uncertainty, testing the validity of assumed models, linear regression and correlation analyses, Monte Carlo simulation, reliability analysis and reliability-based design. Prerequisite: Math 194. FALL [3]

CE 311. Synthesis of Structural Systems. Methods for optimal design of mechanical systems are developed and applied. Nonlinear optimization strategies are implemented through progressive exercises on unconstrained and constrained optimization problems with single and multiple design variables. Students explore the implementation of basic algorithms through computer-based tools and available Fortran (or C) subroutines. Feasibility and optimality conditions and design problem formulation are emphasized. Computer literacy and some programming experience are required. Each student is expected to complete a major design project in their area of technical interest. SPRING. [3]

CE 313. Advanced Reliability Methods. Computational methods for probabilistic analysis and design of modern engineering systems. Emphasis on system reliability, nonlinear reliability methods, Weibull analysis, Bayesian methods, response surface modeling and design of experiments, advanced simulation and variance reduction concepts, sensitivity analysis and reliability-based design optimization. Practical applications using existing software. Prerequisite: CE 310. SPRING. [3]

CE 317. Stability of Structures. Buckling analysis of perfect and imperfect columns, mathematical treatment of various stability criteria, dynamic and static instability, energy methods. Buckling of frames, trusses, beam-columns, rings, and tubes. [3] (Offered on demand)

CE 325a–325b. Individual Study of Civil Engineering Problems. Literature review and analysis of special problems under faculty supervision. FALL, SPRING, SUMMER. [1–4 each semester]

CE 351. Public Transportation Systems. Comprehensive study of public transportation, with emphasis on planning, management, and operations; paratransit, ridesharing, and rural public transportation systems. Prerequisite: CE 256. SPRING. [3]

CE 353. Airport Planning and Design. Integration and application of the principles of airport master planning from the beginning stages of site selection through actual design of an airport facility. Specific study topics address demand forecasting, aircraft characteristics, capacity analyses, and geometric design of runways, terminals, and support facilities. Prerequisite: CE 225 or consent of instructor. [3] (Offered on demand)

CE 355. Advanced Transportation Design. An in-depth view of the design process. Complex design problems and solutions, with the use of computer-based analytical and design tools. Comprehensive design projects. Prerequisite: CE 255. SPRING. [3]

CE 356. Advanced Transportation Planning. A continuation of the concepts from CE 256, with emphasis on analytical techniques used in forecasting travel. Utilization of computer-based models, transportation and energy contingency planning methods. Prerequisite: CE 256. SPRING. [3]

CE 357. Theory of Traffic Flow. A study of traffic flow from the perspective of probability as applied to highway, intersection and weaving capacities. Discrete and continuous flow, vehicle distributions, queuing, and simulation. Prerequisite: CE 257. [3] (Offered on demand)

CE 359. Emerging Information Systems Applications. (Also listed as MT 359) An introduction to emerging information systems technologies and their role in improving productivity and efficiency in managing engineering operations. Design of integrated approaches to enhance the speed, accuracy, reliability, and quantity of information available for decision support. Emphasis on case studies of innovative applications in transportation and manufacturing, leading to individual and group projects requiring new product develop-

ment. Prerequisite: background transportation or manufacturing operations or consent of instructor. FALL. [3]

CE 369. Master's Thesis Research.

CE 389. Master of Engineering Project.

CE 399. Ph.D. Dissertation Research.

Environmental Engineering

ENVE 300. Water Quality Management. Effects of physical, chemical, biological, and physiological pollutants in streams, reservoirs, and estuaries; fate of pollutants in the environment; water quality criteria; water quality management methodology. Biological aspects of water quality control. SPRING. [3]

ENVE 312. Pollutant Transport in the Environment. An introduction to the mathematical foundations of fluid mechanics and transport of pollutants in the environment. Fundamental conservation of mass, momentum, and energy equations will be developed. Appropriate initial and boundary conditions and solution techniques will be discussed for a number of applications. Prerequisite: CE 203, Math 198. FALL. [3]

ENVE 321. Water Treatment Theory and Practice. Drinking water standards, advanced study of the theory of water treatment operations and processes, relation of theory and design practice, analysis and design of water treatment units. Prerequisite: CE 211 or equivalent. FALL. [3]

ENVE 322. Biotransformation of Environmental Contaminants. Study of the microbial transformations which convert oxygen demanding and hazardous and toxic materials to intermediates or completely mineralized and innocuous end products. The physical and chemical parameters which control the rates and extent of these biotransformations and the design principles which govern these biochemical engineering processes. Analysis and design of wastewater treatment systems. Prerequisite: CE 211 or equivalent. FALL. [3]

ENVE 323. Industrial Waste Treatment. Studies of the waste characteristics from industrial processes and their effect on the environment. Unit operations and processes of industrial waste treatment, industrial waste discharge, and water quality criteria. Prerequisite: CE 211 or equivalent. FALL. [3]

ENVE 324. Advanced Environmental Engineering Laboratory. Laboratory and pilot plant studies of unit operations and processes of water and waste treatment, kinetics of biological oxidation systems, hydraulics of conveyance and treatment systems, and other special topics. Prerequisite: ENVE 321, 322. SPRING. [3]

ENVE 325a–325b–325c. Individual Study. Literature review and analysis, or laboratory investigation of special problems under faculty supervision. FALL, SPRING, SUMMER. [Variable credit: 1–4 each semester]

ENVE 352. Advanced Physical/Chemical Wastewater Treatment. (Also listed as ChE 352) The theory of mass transfer and chemical reactor technology in advanced wastewater treatment design; physical/chemical processes in municipal and industrial wastewater treatment; evaluation of process alternatives for cost effectiveness. Prerequisite: CE 211 or consent of instructor. SPRING. [3]

ENVE 355. Hazardous Waste Engineering. Generation, chemistry, and toxicology of hazardous materials. Legal requirements. Sampling and analyses of hazardous materials.

Cleanup of hazardous materials spills. Impact of hazardous materials on the environment including bioassay techniques, aquatic impacts, and surface and groundwater modeling. Abandoned site investigations. Physical/chemical treatment including incineration, land filling, and land farming. Design of safe disposal systems. FALL. [3]

ENVE 369. Master's Thesis Research.

ENVE 389. Master of Engineering Project.

ENVE 399. Ph.D. Dissertation Research.

Computer Engineering

DIRECTOR A. B. Bonds

PROFESSORS A. B. Bonds, John R. Bourne, Arthur J. Brodersen, James A. Cadzow,

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ASSISTANT PROFESSOR Gábor Karsai

RESEARCH ASSISTANT PROFESSOR Csaba Biegl

RESEARCH INSTRUCTOR Martine Dawant

I THE program in Computer Engineering deals with the organization, design, and application of digital processing systems as general-purpose computers or as embedded systems, i.e., components of information processing, control, and communication systems. The program provides a strong engineering background centered on digital technology combined with an understanding of the principles and techniques of computer science. Computer engineering is design-oriented. The basic principles of engineering and computer science are applied to the task at hand, which may be the design of a digital processor, processor peripheral, or a complete digital processor-based system. Whatever the undertaking, the comprehensive academic training in this program enables engineers to evaluate the impact of their decisions, whether working with hardware, software, or the interface between the two.

Undergraduate Honors Program. The Computer Engineering program offers an undergraduate Honors Program, with a diploma designation as Honors in Computer Engineering. With faculty approval, admission to the program can occur at any time after achievement of junior status and requires a 3.5 grade point average. A 3.5 grade point average is also required at the time of graduation. In addition to completion of all of the computer engineering requirements listed below, the honors student must (a) complete independent study (CompE 203–204) totaling three hours, for a total of 130 program hours; and (b) fulfill six of the computer engineering elective hours listed below (section 7) by any combination of additional (up to three hours) independent study, graduate courses in electrical engineering or computer

science above the 300 level, or design courses beyond the one design course already required.

The Computer Engineering program combines fundamental core requirements with flexibility to allow students to specialize in a variety of emphasis areas within the program. The curriculum includes requirements in the basic sciences, mathematics, and humanities; a primary core of hardware and software courses; and a set of electives that combine breadth and depth requirements as described below. The course of study leads to a Bachelor of Engineering degree.

Curriculum Requirements

The B.E. degree in computer engineering requires a minimum of 127 hours, distributed as follows:

1. Mathematics (17 hours). Required courses: 155a–155b, 175, 198, 194 (qualified students may substitute an honors mathematics sequence).

2. Basic Science (16 hours). Required courses: Chemistry 102a, Physics 116a–116b or 117a–117b, MSE 150 (or Chemistry 102b for some double majors).

3. Engineering Fundamentals (6 hours). Required courses: ES 130, ES 210W.

4. Humanities–Social Science Electives (18 hours). To be selected from the approved lists (see Distribution Requirements). Students may elect to take a technology–society elective instead of one of the humanities–social science electives (see Distribution Requirements).

5. Open Electives (3 hours).

6. Computer Engineering core (22 hours). Required courses: EECE 112, 116, 218, CS 101, 201, and 231.

7. Computer Engineering electives (27 hours) Computer engineering electives are defined by a structure that includes the six emphasis areas listed below.

The first course in each emphasis area (in boldface type) is the gateway course. It defines a minimal prerequisite because students are required to take that course before they can enroll for any of the remaining courses in the same emphasis area (for some courses other prerequisites may apply).

The requirements combine breadth and depth components. Students must cover at least three emphasis areas in depth to meet the breadth requirement. At least one of the areas must be in Systems: Embedded Architectures (area 1) or Computer Systems (area 2). Students must meet the depth requirement in an emphasis area by taking the gateway course and at least one other course in that area.

Emphasis Areas

Embedded Architectures (area 1)	Computer Systems (area 2)	VLSI/ Electronics (area 3)	Intell Systems/ Robotics (area 4)	Signals & Systems (area 5)	Computational Methods (area 6)
EECE 276*	CS 281	EECE 235	CS 260	EECE 214	CS 250
EECE 256*	CS 282*	EECE 280*	CS 269*	CS 274	CS 255
CS 277*	CS 283*	EECE 285*	EECE 253*	EECE 252	CS 257
EECE 272*	CS 284	EECE 277*	EECE 254*	EECE 253*	CS 265*
EECE 273*	CS 270		EECE 258	EECE 254*	CS 264*
EECE 279*	CS 277*		EECE 271*	EECE 256*	
EECE 277*	EECE 273*			EECE 257	
	EECE 274*			EECE 258	
	CS 276*			EECE 263	

Starred courses count toward design course credits. To meet ABET requirements, students must take at least one design course.

8. Technical electives (18 hours).

- a. (6 hours) A minor sequence to be selected from any clearly related, structured pair of courses in the approved engineering technical elective list below. One course will normally be prerequisite to the second course.

BME (except 290)

ChE (except 216)

CE (except 160, 216, 279)

ME

MSE (except 150)

- b. (6–12 hours) At least 6 hours to be taken from the list of approved engineering technical electives in paragraph 8a, and

CmpE

CS (except 150, 151, 214)

EECE (except 200)

- c. (0–6 hours) Up to 6 hours may be taken from this list of optional technical electives.

ChE 216 or CE 216 or MT 216

MSE 150 (if Chem 102b is used as a basic science)

MT 246

Astronomy (except 101–102, 130)

Biology

Chemistry (except 101a–b, 102a–b)

Geology (except 100, 102)

Mathematics above 194 (except 252)

Molecular Biology

Physics (except courses numbered 122 or below and 210)

Neuroscience 201, 255

Psychology 208, 209, 234, 259, 269a–b

Specimen Curriculum for Computer Engineering

		Semester hours	
		FALL	SPRING
FRESHMAN YEAR			
EECE 116	Digital Logic		4
	Other freshman courses (see the engineering freshman-year specimen curriculum)	14	12
		<u>14</u>	<u>16</u>
SOPHOMORE YEAR			
Math 175	Analytic Geometry and Calculus	3	–
Physics 116b or 117b	General Physics	4	–
CS 201	Program Design and Data Structures	4	–
EECE 112	Electrical Engineering Science	3	–
Math 198	Elementary Differential Equations	–	3
CS 231	Computer Organization	–	3
EECE 218	Microprocessors and Microcontrollers I	–	4
Chem 102b or	General Chemistry		
MSE 150	Materials Science I	–	4
	Humanities–social science elective	3	3
		<u>17</u>	<u>17</u>
JUNIOR YEAR			
EECE 276 or	Microprocessors and Microcontrollers II	4	–
CS 281	Principles of Operating Systems I	3	–
	CompE elective	3	–
	Minor sequence	3	–
ES 210W	Technical Communications	3	–
Math 194	Matrices and Linear Systems	–	3
	CompE electives	–	6
	Minor sequence	–	3
	Open elective	–	3
	Humanities–social science elective	3	3
		<u>15–16</u>	<u>18</u>
SENIOR YEAR			
	CompE electives	9	6
	Technical electives	6	6
	Humanities–social science elective	–	3
		<u>15</u>	<u>15</u>

†Computer Engineering majors take EECE 116 in the freshman year and MSE 150 in the sophomore year.

CompE 203–204. Independent Study. Readings or projects on basic topics in computer engineering or related fields under the supervision of staff. Consent of instructor required. No more than 6 hours may be applied towards graduation. [Variable credit: 1–3 each semester]

CompE 291–292. Special Topics. [Variable credit: 1–3 each semester] Offered on demand.

Computer Science

DIRECTOR OF UNDERGRADUATE STUDIES Vijay Raghavan

DIRECTOR OF GRADUATE STUDIES Douglas H. Fisher

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PROFESSOR EMERITA Charlotte F. Fischer

PROFESSORS Lawrence W. Dowdy, J. Michael Fitzpatrick

ASSOCIATE PROFESSORS Gautam Biswas, Douglas H. Fisher, Vijay Raghavan, Stephen

R. Schach, Jeremy P. Spinrad

ASSISTANT PROFESSOR J. Fritz Barnes, Robert E. Bodenheimer, Jr., Daniel M. Gaines

I THE program in Computer Science blends scientific and engineering principles, theoretical analysis, and actual computing experience to provide undergraduate students with a solid foundation in the discipline. Emphasis is on computing activities of both practical and intellectual interest, and on theoretical studies of efficient algorithms and the limits of computation. Good computer facilities are available for class assignments, team projects, and individual studies. Students are challenged to seek original insights throughout their study. Working in teams, participating in summer internships, supporting student professional organizations, and developing interdisciplinary projects are strongly encouraged.

The computer science degree program offered by the School of Engineering is accredited by the Computer Science Accreditation Commission (CSAC) of the Computing Sciences Accreditation Board (CSAB) a specialized accrediting body recognized by the Council for Higher Education Accreditation (CHEA). In addition to Bachelor of Science, degrees of Master of Science, Master of Engineering, and Doctor of Philosophy are also awarded in Computer Science. Many students choose to double major in mathematics.

Undergraduate Honors Program. Students interested in the honors program should apply to the department chair. See the *Special Programs* chapter for general requirements of the professional honors program in computer science.

Curriculum Requirements

The B.S. degree in computer science requires a minimum of 122 hours, with distribution as follows:

1. Mathematics (16-22 hours). Required components:

(a) A Calculus sequence (7-12 hours).

Selected from the following:

- 150a, 150b, 170a, 170b

- 155a, 155b, 175

- 165, 175

- 165, 205a, 205b

(b) Linear algebra (3-4 hours): 194, 204, or 205a.

(c) Statistics/Probability (3 hours): 218 or 247.

Elective course (3 hours):

Selected from: 198, 200, 208, 215, 219, 221, 223, 226,
247, 250, 253, 274, 275, 288.

2. Science (12 hours).

Selected from the following list. Each is a four credit hour lab course. Students are required to take at least one two-course sequence.

- Biological Sciences (110a-110b)
- Biology (100, 119, 129)
- Chemistry (102a and 104a, 102b and 104b, 103a-103b)
- Geology (101, 104)
- Honors (185a, 185b)
- Materials Science and Engineering 150
- Physics (116a-116b, 117a-117b, 121a-121b)

Recommended: Chemistry 102a and 104a, Physics 116a-116b, or 117a-117b.

3. Fundamentals of Computing (3 hours). CS 150 or ES 130.

4. Writing Component (3 hours). ES 210W or one designated "W" course, excluding English 100W.

5. Computer and Professional Ethics (3 hours). CS 151, Phil 105, or Phil 206.

6. Humanities-Social Science Electives (18 hours). To be selected from the approved lists (see Distribution Requirements). Three hours may be in a technology and society elective.

7. Computer Science Core (26-28 hours).

- Digital Logic Fundamentals: EECE 116.
- Discrete Mathematics/Structures: CS 212 or Math 215.
- Introductory Programming and Problem Solving: CS 101.
- Intermediate Software, Systems, and Theory: CS 201, CS 231, CS 250, CS 270, and CS 281.

8. Advanced Computer Science (18 hours). Students are required to take 18 additional hours of computer science courses numbered CS 242 or above, but excluding CS 257. At least one course (i.e., 3 hours) must be a designated project course selected from 265, 269, 276, 277, 282, 283, or 284. CS 240 (Undergraduate Research) may be substituted under special circumstances with departmental and adviser approval.

9. Broadening Electives (9 hours). Adviser approval must be obtained for broadening electives. In particular, broadening electives are to be used for further study in areas that enhance majors as computer scientists. Computer science and computer engineering courses may not be used as broadening electives. Additional humanities-social science electives, international studies, business related courses, enhanced technical electives, or courses that lead to a double major are especially encouraged.

10. Oral Component (0 hours). Each student must give a technical presentation to others. Ways to fulfill this requirement include oral presentation in a class or in a public forum. The student must obtain adviser approval and file

an Undergraduate Oral Component Satisfaction Form in the departmental office.

11. Open Electives (6 - 14 hours).

(*Note:* In the event that a given course could be used to satisfy, or partially satisfy, requirements in more than one of the above categories, the student and adviser may choose the category to which the course will apply. That is, no course may be "double-counted.")

Pass-Fail Courses. The only courses that computer science students may choose to take pass-fail are those in items 6, 9, and 11 above.

Specimen Curriculum for Computer Science

		Semester hours	
		FALL	SPRING
FRESHMAN YEAR			
Chem 102a	General Chemistry	3	–
Chem 104a	General Chemistry Laboratory	1	–
Physics 116a	General Physics	–	4
Math 155a	First Year Acc. Calculus	4	–
Math 155b	First Year Acc. Calculus	–	4
	Computer/Professional Ethics (e.g., CS 151)	3	–
CS 101	Programming and Problem Solving	–	4
	Computing Basics (e.g., CS 150 or ES 130)	3	–
	Humanities–social science elective	–	3
		14	15
SOPHOMORE YEAR			
		FALL	SPRING
Physics 116b	General Physics	4	–
Math 175	Second Year Acc. Calculus	3	–
Math 218	Introduction to Math Statistics	–	3
EECE 116	Digital Logic	4	–
CS 201	Program Design and Data Structures	4	–
CS 212	Discrete Structures	–	3
CS 231	Computer Organization	–	3
	Humanities–social science electives	–	3
	Broadening elective	–	3
		15	15
JUNIOR YEAR			
Math 194	Methods of Linear Algebra	3	–
	Math elective (e.g., Math 250)	–	3
ES 210W	Technical Communication	3	–
CS 250	Algorithms	3	–
CS 270	Programming Languages	–	4
CS 281	Operating Systems Principles I	3	–
	Advanced computer science elective	–	6
	Humanities–social science electives	3	3
	Broadening elective	3	–
		18	16
SENIOR YEAR			
		FALL	SPRING

Advanced computer science electives	6	6
Computer science project course	3	–
Humanities–social science electives	3	3
Broadening electives	3	–
Open electives	–	5
	<u>15</u>	<u>14</u>

Computer Science Minor

The minor in computer science requires 20 hours of computer science courses as follows:

1. Programming: CS 101	4
2. Discrete Structures: CS 212	3
3. Intermediate Computer Concepts: CS 201 and 231	7
4. Two additional CS courses numbered 250 or above	6

Total Hours: 20

CS 101. Programming and Problem Solving. An intensive introduction to algorithm development and problem solving on the computer. Intended for engineering majors and others who already have some familiarity with computer programming. Structured problem definition, top down and modular algorithm design. Running, debugging, and testing programs. Program documentation. FALL, SPRING. [4]

CS 150. Introduction to Computing and Programming. An introduction to the use of computers, applications, and programming. Intended for students with little or no computer or programming experience. Problem definition, algorithm design, and problem solving using the computer. Teamwork. Laboratory experience. Credit given for only one of CS 150 and ES 130. FALL, SPRING. [3]

CS 151. Computers and Ethics. Analysis and discussion of problems created for society by computers, and how these problems pose ethical dilemmas to both computer professionals and computer users. Topics include: computer crime, viruses, software theft, ethical implications of life-critical systems. Technology-society elective. FALL, SPRING. [3]

CS 201. Program Design and Data Structures. Continuation of CS 101. The study of elementary data structures, their associated algorithms and their application in problems; rigorous development of programming techniques and style; design and implementation of programs with multiple modules, using good data structures and good programming style. Prerequisite: 101. SPRING. [4]

CS 212. Discrete Structures. (Also listed as Math 214) A broad survey of the mathematical tools necessary for an understanding of computer science. Topics covered include an introduction to sets, relations, functions, basic counting techniques, permutations, combinations, graphs, recurrence relations, simple analysis of algorithms, O-notation, Boolean algebra, propositional calculus, and numeric representation. Prerequisite: A course in computer science or two semesters of calculus. FALL, SPRING. [3]

CS 231. Computer Organization. The entire hierarchical structure of computer architecture, beginning at the lowest level with a simple machine model (e.g., a simple von Neumann machine). Processors, process handling, I/O handling, and assembler concepts. Graduate credit not given for computer science majors. Prerequisite: 201; corequisite: EECE 116. FALL, SPRING. [3]

CS 240a–240b. Undergraduate Research. Open to qualified majors with consent of instructor and adviser. No more than 3 hours may be counted towards the computer science major. Prerequisite: 231. FALL, SPRING. [Variable credit: 1–3 each semester, not to exceed a total of 6]

CS 242. Special Topics in Computer Science. [Variable credit: 1–3]

CS 250. Algorithms. Advanced data structures, systematic study and analysis of important algorithms for searching; sorting; string processing; mathematical, geometrical, and graph algorithms, classes of P and NP, NP-complete and intractable problems. Prerequisite: 201 and 212. FALL. [3]

CS 252. Theory of Automata, Formal Languages, and Computation. Finite-state machines and regular expressions. Context-free grammars and languages. Pushdown automata. Turing machines. Undecidability. The Chomsky hierarchy. Computational complexity. Prerequisite: 212. SPRING. [3]

CS 255. Introduction to Numerical Mathematics. (Also listed as Math 226) Numerical solution of linear and nonlinear equations, interpolation, and polynomial approximation theory, numerical solution of differential equations, errors and floating point arithmetic. Application of the theory to problems in science, engineering, and economics. Student use of the computer is emphasized. Prerequisite: computer programming and linear algebra. FALL, SPRING. [3]

CS 257. Linear Optimization. (Also listed as Mathematics 288) An introduction to linear programming and its applications. Formulation of linear programs. The simplex method, duality, complementary slackness, dual simplex method and sensitivity analysis. The ellipsoid method. Interior point methods. Possible additional topics include the primal-dual algorithm, cutting planes, or branch-and-bound. Applications to networks, management, engineering and physical sciences. Prerequisites: linear algebra and computer programming. SPRING. [3]

CS 260. Artificial Intelligence. Introduction to the principles and programming techniques of artificial intelligence. Strategies for searching, representation of knowledge and automatic deduction, learning, and adaptive systems. Survey of applications. Prerequisite: 201 and 212. FALL. [3]

CS 265. Introduction to Database Management Systems. Logical and physical organization of databases. Data models and query languages, with emphasis on the relational model and its semantics. Concepts of data independence, security, integrity, concurrency. Prerequisite: 201. FALL. [3]

CS 269. Project in Artificial Intelligence. Students work in small groups on the specification, design, implementation, and testing of a sizeable AI software project. Projects (e.g., an “intelligent” game player) require that students address a variety of AI subject areas, notably heuristic search, uncertain reasoning, planning, knowledge representation, and learning. Class discussion highlights student progress, elaborates topics under investigation, and identifies other relevant topics (e.g., vision) that the project does not explore in depth. Prerequisite: 260 or consent of instructor. SPRING. [3]

CS 270. Programming Languages. General criteria for design, implementation, and evaluation of programming languages. Historical perspective. Syntactic and semantic specification, compilations, and interpretation processes. Comparative studies of data types and data control, procedures and parameters, sequence control, nesting, scope and storage management, run-time representations. Non-standard languages, problem-solving assignments in a laboratory environment. Prerequisite: 231. SPRING. [4]

CS 274. System Simulation. Introduction to simulation and comparison with other techniques. Discrete simulation models and introduction to or review of queuing theory and stochastic processes. Comparison of discrete change simulation languages. Simulation methodology including generation of random numbers and variates, design of simulation experiments of optimization, analysis of data generated by simulation experiments, and validation of simulation models and results. Selected applications of simulation. Prerequisite: 101 or 102; Math 218 or Econ 201. SPRING. [3]

CS 276. Compiler Construction. Review of programming language structures, translation, loading, execution, and storage allocation. Compilation of simple expressions and statements. Organization of a compiler including compile-time and run-time symbol tables, lexical scan, syntax scan, object code generation, error diagnostics, object code optimization techniques, and overall design. Use of a high-level language to write a complete compiler. Prerequisite: 231. FALL [3]

CS 277. Software Engineering. The nature of software. Object-oriented paradigm. Software life-cycle models. Requirements, specifications, design, implementation, documentation, and testing of software. Object-oriented analysis and design. Maintenance. Team project of developing object-oriented software. Prerequisite: 270 and 281. FALL. [3]

CS 281. Principles of Operating Systems I. Overview of goals of operating systems. Introduction to the resource allocation and control functions of operating systems. Scheduling of processes and processors. Concurrent processes and primitives for their synchronization. Use of parallel processes in designing operating system subsystems. Methods of implementation of parallel processes on conventional computers. Introduction of notions of virtual memory, paging, protection of shared and non-shared information. Structures of files of data in secondary storage. Security issues. Case studies. Prerequisite: 231. FALL, SPRING. [3]

CS 282. Principles of Operating Systems II. Projects involving modification of a current operating system. Lectures on memory management policies, including virtual memory. Protection and sharing of information, including general models for implementation of various degrees of sharing. Resource allocation in general, including deadlock detection and prevention strategies. Introduction to operating system performance measurement, for both efficiency and logical correctness. Two hours lecture and one hour laboratory. Prerequisite: 281. SPRING. [3]

CS 283. Computer Networks. Computer communications, network architectures, protocol hierarchies, and the open systems interconnection model. Modeling, analysis and specification of protocols. Wide area networks and local area networks including rings, buses, and contention networks. Prerequisite: 281. SPRING. [3]

CS 284. Computer Systems Analysis. Techniques for evaluating computer system performance with emphasis upon application. Topics include measurement and instrumentation techniques, benchmarking, simulation techniques, elementary queuing models, data analysis, operation analysis, performance criteria, case studies. Project involving a real computer system. Prerequisite: 281. SPRING. [3]

CS 310. Design and Analysis of Algorithms. Set manipulation techniques, divide-and-conquer methods, the greedy method, dynamic programming, algorithms on graphs, backtracking, branch-and-bound, lower bound theory, NP-hard and NP-complete problems, approximation algorithms. Prerequisite: 250. SPRING. [3]

CS 311. Graph Algorithms. Algorithms for dealing with special classes of graphs. Particular emphasis is given to subclasses of perfect graphs and graphs that can be stored in a small amount of space. Interval, chordal, permutation, comparability, and circular-arc graphs; graph decomposition. Prerequisite: CS 310 or Math 275. FALL. [3]

CS 312. Computational Learning Theory. An overview of computational learning theory and problems of current interest. Topics include: the PAC model of learning, exact learning with queries, Occam's razor, the Vapnik-Chervonenkis dimension, techniques for proving positive and negative results for learnability, and a study of existing learning algorithms. Prerequisite: consent of instructor. FALL. [3]

CS 320. Algorithms for Parallel Computing. Design and analysis of parallel algorithms for sorting, searching, matrix processing, FFT, optimization, and other problems. Existing and proposed parallel architectures, including SIMD machines, MIMD machines, and VLSI systolic arrays. Prerequisite: 310 or consent of instructor. [3]

CS 325. Supercomputers in Scientific Computing. An overview of supercomputer architecture. Topics will include compiler limitations on vectorization, matrix-vector algorithms for vector machines, multi-tasking and the role of shared memory and communication between tasks. Several timing studies will be performed on a supercomputer. Characteristics of quality software for scientific computing will be reviewed. Prerequisite: 255 or Math 226. FALL. [3]

CS 330. Large Scale Database Management Systems. Organization of major information processing systems. Documentation methods and design techniques. The database system life cycle. Concurrency control. Integrity constraints. Prerequisite: 265. FALL. [3]

CS 331. Topics in Theory of Database Systems. Prerequisite: 265. SPRING. [3]

CS 357. Image Processing. (Also listed as EECE 357) Basic techniques of image processing. Topics include image formation, digitization, linear shift-invariant processing, feature detection, and motion. Prerequisite: Math 175; programming experience. FALL. [3]

CS 358. Computer Vision. (Also listed as EECE 358) The fundamentals of computer vision and techniques for image understanding and high-level image processing. Includes image segmentation, geometric structures, relational structures, motion, matching, inference, and vision systems. Prerequisite: 357 or EECE 357. SPRING. [3]

CS 360. Advanced Artificial Intelligence. Discussion of state of the art and current research issues in heuristic search, knowledge representation, deduction, and reasoning. Related application areas include: planning systems, qualitative reasoning, cognitive models of human memory, user modeling in ICAI, reasoning with uncertainty, knowledge-based system design, and language comprehension. Prerequisite: 260 or equivalent. FALL. [3]

CS 362. Machine Learning. An introduction to machine learning principles of Artificial Intelligence, stressing learning's role in constraining search by augmenting and/or reorganizing memory. Topics include connectionist systems; concept learning from examples; operator, episode, and plan learning; problem-solving architectures that support learning; conceptual clustering; computer models of scientific discovery; explanation-based learning; and analogical reasoning. Psychological as well as computational interests in learning are encouraged. Prerequisite: 260, 360, or equivalent. SPRING. [3]

CS 364. Intelligent Learning Environments. (Also listed as EECE 355) Theories and concepts from computer science, artificial intelligence, cognitive science, and education that facilitate designing, building, and evaluating computer-based instructional systems. Development and substantiation of the concept, architecture, and implementation of intelligent learning environments. Multimedia and web-based technology in teaching, learning, collaboration, and assessment. Prerequisite: 260,360, or equivalent. SPRING [3]

CS 366. Topics in Knowledge Engineering. Introduction to expert systems design and automated methods for expert knowledge acquisition. Expert systems topics include models of expert problem solving, uncertain reasoning, inference strategies, and explanation of problem solving. Automated knowledge acquisition topics include rapid prototyping techniques, model-based knowledge elicitation, knowledge base refinement, and machine learning techniques. Prerequisite: 260, 360, or equivalent. [3]

CS 367. Advanced Reasoning Techniques in Artificial Intelligence. Model-based and qualitative reasoning methodologies. Modeling paradigms covered include structure-behavior models, component connection and compositional modeling, and functional-causal models of physical systems. The spectrum of reasoning and simulation methodologies from qualitative to quantitative analysis are discussed. Applications include design of engineering systems and diagnosis of complex engineering and physiological systems. Prerequisite: CS 360 or equivalent, or permission of instructor. SPRING [3]

CS 368. Topics in Artificial Intelligence. FALL. [3]

CS 369. Master's Thesis Research. [0]

CS 381. Advanced Operating Systems Principles. Techniques for formally analyzing various issues in operating systems. Includes process synchronization, interprocess communication, deadlock, naming, memory management, objective capability-models, architectural support, protection, fault tolerance. Prerequisite: 281. FALL. [3]

CS 382. Topics in Operating Systems. Prerequisite: 281. SPRING. [3]

CS 384. Performance Evaluation of Computer Systems. Techniques for computer systems modeling and analysis. Topics covered include: analytical modeling with emphasis on queuing network models, efficient computational algorithms for exact and approximate solutions, parameter estimation and prediction, validation techniques, workload characterization, performance optimization, communication and distributed system modeling. Prerequisite: 281 or 381. SPRING. [3]

CS 386. System-Level Fault Diagnosis. An overview of the basic concepts of the theory of fault diagnosis and problems of current interest. Topics include the classical PMC and BGM models of fault diagnosis, hybrid (permanent and intermittent faults) models, diagnostic measures for one-step, sequential, and inexact diagnosis. Emphasis is on algorithmic techniques for solving the diagnosis and diagnosability problems in various models. Prerequisite: 381 or consent of instructor. SPRING. [3]

CS 387. Topics in Software Engineering. Topics may include software development and maintenance environments, software metrics, correctness proofs, Ada as a case study in software engineering, and artificial intelligence aspects of software engineering. Prerequisite: 277 or consent of instructor. SPRING. [3]

CS 389. Master of Engineering Project

CS 390. Individual Studies. Offered each term. [1-3]

CS 391-392. Seminar. [1-3 each semester]

CS 395-396. Special Topics. [3-3]

CS 399. Ph.D. Dissertation Research.

Electrical Engineering

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I THE electrical engineer has been primarily responsible for the computer revolution that society is experiencing. The development of large-scale integrated circuits has led to the development of computers in a broad range of sizes and capabilities. Computers greatly influence the methods used by engineers for designing and problem solving.

The curricula of the electrical engineering and computer engineering majors* are multifaceted. They provide a broad foundation in mathematics, physics, and computer science and a traditional background in circuit analysis and electronics. Several exciting areas of concentration are available, including microelectronics, computer systems, communications, control systems, and signal processing. Double majors may be arranged with most programs, including biomedical engineering, materials science, and mathematics. Students receive an education that prepares them for diverse careers in industry and government and for postgraduate education.

Undergraduate Honors Program. With faculty approval, junior and senior students in electrical engineering who have achieved a minimum quality point ratio of 3.5 may be accepted into the honors program. The program must include two additional approved project design (PD) courses. The student must maintain an overall 3.5 quality point average to be designated as an honors graduate. The diploma designation is Honors in Electrical Engineering.

Facilities. Electrical and computer engineering supports undergraduate laboratories emphasizing the principal areas of the disciplines: analog and digital electronics, microcomputers, microprocessors, microelectronics, instrumentation, and electromechanical energy conversion. In addition, several specialized facilities are available for graduate research: the multiprocessing laboratory for intelligent instrumentation, the computer-aided design laboratory, the image processing laboratory, the microelectronics parameter extraction facility and space electronics research laboratories, the robotics and automation laboratory, and several electrophysiological data processing labo-

ratories for analyzing and interpreting various electrophysiological signals in biomedical research.

The work in electrical and computer engineering is supported by a variety of computers. An array of IBM PCs and SUN and HP workstations is available via a high speed network. Vanderbilt is one of the founding partners in the Internet II initiative.

*The B.E. degree requirements in computer engineering are described beginning on page 452.

Curriculum Requirements

The B.E. degree in electrical engineering requires a minimum of 128 hours distributed as follows:

1. Mathematics (17 hours). Required courses: 155a–155b, 175, 198 (qualified students may substitute an honors mathematics sequence). Elective chosen from any course numbered 194 or above, except 252.

2. Basic science (16 hours). Required courses: Chemistry 102a, Physics 116a–116b, MSE 150 (or Chemistry 102b for some double majors).

3. Computer science (4 hours). Required courses: 101.

4. Computer graphics (3 hours). Required course ES 130.

5. Electrical engineering (43 hours). Required courses (21 hours): 112, 116, 213, 214, 233, 235. Advanced requirements: students must complete one or more courses from at least three concentration areas in Electrical Engineering as described in the *Electrical Engineering Areas of Concentration* table below. Electives: at least one approved project/design (PD) course as designated below. Other EECE electives to total 43 hours.

Electrical Engineering Areas of Concentration

Computer Engineering	Microelectronics	Signals and Systems	Power
EECE 218	EECE 280 (PD)	EECE 252	EECE 264
EECE 256 (PD)	EECE 283	EECE 253 (PD)	EECE 265
EECE 271	EECE 272	EECE 284	EECE 254
EECE 266	EECE 285 (PD)	EECE 256 (PD)	EECE 267
EECE 274 (PD)	EECE 286	EECE 257	EECE 268
EECE 276 (PD)		EECE 258	EECE 269
EECE 277		EECE 263	
EECE 279 (PD)		EECE 271	

(PD) designates a Project/Design course

6. Humanities–social science electives (15 hours). To be selected from the approved lists (see Distribution Requirements).

7. Open electives (3 hours).

8. Technology-society elective (3 hours.) (See Distribution Requirements.) Students may elect to take an additional humanities-social science elective instead of the technology-society elective.

9. Technical electives (21 hours).

a. (6 hours). A minor sequence to be selected from any structured pair of courses in the approved engineering technical elective, listed below, that are clearly related. One course will normally be a prerequisite-requisite for the second course. The minor sequence is considered part of the student's major field and may not be taken pass-fail.

b. (9–15 hours). At least 9 hours must be taken from this list of approved engineering technical electives.

BME (except 240a–240b)

ChE (except 216)

CE (except 216, 279)

CS (except 100, 102, 150, 151, 212, 214, 255, 257)

EECE (hours above basic requirements of 43 hours)

ME

MSE (except 150)

c. (0–6 hours). Up to 6 hours may be taken from this list of optional technical electives.

CS 212, 255, 257

ChE 216, or CE 216, or MT 216

MSE 150 (if Chemistry 102b is used as a basic science)

MT 246

Astronomy (except 101–102, 130)

Biology

Chemistry (except 101a–b, 102a–b)

Geology (except 100, 102)

Mathematics above 194 (except 198, 252)

Molecular Biology

Physics (except courses numbered 122 or below and 210)

Neuroscience 201, 255

Psychology 208, 209, 234, 259, 269a–b

10. Technical Writing (3 hours). Required course: ES 210W.

Double majors have special curricula that require more than 128 hours and a different distribution of electives. See the EECE double major adviser for these curricula.

Specimen Curriculum for Electrical Engineering

		Semester hours	
FRESHMAN YEAR †		FALL	SPRING
EECE 116	Digital Logic	–	4
	Other freshman courses (see the engineering freshman-year specimen curriculum)	<u>14</u>	<u>12</u>
		14	16

SOPHOMORE YEAR		FALL	SPRING
Math 175	Analytic Geometry and Calculus	3	–
Math 198	Elementary Differential Equations	–	3
Physics 116b	General Physics	4	–
EECE 112	Electrical Engineering Science	3	–
EECE 213	Network Theory I	–	4
EECE 116			
or CS 101 †	Digital Logic	4	–
	Humanities–social science elective	3	6
	Minor sequence*	–	3
		17	16
JUNIOR YEAR			
EECE 214	Signals and Systems	3	–
EECE 233	Electromagnetics	3	–
EECE 235	Electronic Circuits I	4	–
ES 210W	Technical Communications	–	3
	Mathematics elective	3	–
	Minor sequence*	3	–
	EECE advanced electives**	–	6–7
	Technical electives	–	6
		16	15–16
SENIOR YEAR			
	Humanities–social science elective	3	3
	Open elective	3	–
	EECE advanced electives**	3	–
	EECE program electives	6	6–7
	Technical electives	3	6
		18	15–16

*Any structured two-semester sequence of basic engineering courses.

**Approved courses from three concentration areas.

†Electrical engineering majors are encouraged to take EECE 116 in the spring of their freshman year in lieu of CS 101. CS 101 may be taken in the sophomore year. Electrical engineering/computer science double majors should follow the common Engineering School freshman curriculum, including CS 101, and take EECE 116 in the sophomore year.

EECE 112. Electrical Engineering Science. Development of basic electrical circuit element models, signal representations, and methods of circuit analysis. Matrix methods and computer techniques are emphasized. Demonstrations of physical components, measurement techniques, and transient phenomena are presented. Corequisite: Physics 116b; Math 175. (Credit given for only one of EECE 112 and 200) FALL, SPRING. [3]

EECE 116. Digital Logic. Numbering systems. Boolean algebra and combinational logic, graphical simplification, sequential logic, registers, and state machines. Three lectures and one laboratory period. FALL, SPRING. [4]

EECE 200. Elements of Electrical Engineering. (Also listed as Physics 210) An introduction to passive and active circuits. Direct-current and alternating-current circuits, power supplies, amplifiers, oscillators, wave-shaping and switching circuits. Emphasis on the operational characteristics of these circuits. For non–electrical engineering students. Prerequisite: Physics 116b, Math 175. (Credit given for only one of EECE 112 and 200.) SPRING. [3]

EECE 203–204. Independent Study. Readings or projects on basic topics in electrical engineering or related fields under the supervision of the staff. Consent of instructor required. [Variable credit: 1–3 each semester]



EECE 213. Network Theory I. Steady-state and transient analysis of electrical networks with emphasis on Laplace transform methods and pole-zero concepts. Three lectures and one laboratory period. Prerequisite: 112, Physics 116b. Corequisite: Math 198. FALL, SPRING. [4]

EECE 214. Fundamentals of Communications and Control. Covers the fundamental signal and system concepts necessary for the study of communications and control systems. Includes continuous-time and discrete-time signal and system concepts, Fourier analysis in both continuous and discrete-time, Z-transform, and the FFT. Prerequisite: 112. FALL, SPRING. [3]

EECE 218. Microcontrollers. Microprocessor and microcontroller architecture with emphasis on control applications. Usage of assembly language and interfacing with programs written in high-level languages. Interfacing and real time I/O with 8-bit microprocessors, control algorithms, and networking with microcontrollers. Three lectures and one laboratory. Prerequisite: EECE 116, CS 101. SPRING [4]

EECE 225. The Visual System. (Also listed as Psychology 236.) Introduction to physiological optics, retinal anatomy, physiology, neurochemistry, color vision, brain processing, and clinical problems associated with the visual system. Prerequisite: junior status. SPRING [3]

EECE 233. Electromagnetics. Introduction to electromagnetic field theory. Maxwell's equations are developed from the historical approach. Electromagnetic waves are discussed with regard to various media and boundary conditions. Graduate credit except for electrical engineers. Prerequisite: Physics 116b; Math 198. FALL. [3]

EECE 235. Electronic Circuits I. Introduction to semiconductor devices and electronic circuits. Diodes, BJT and MOS transistors. Device models, modes of operation, biasing. Small-signal models, low-frequency analysis of single- and multi-stage analog amplifiers, simple amplifier design. Large signal models, dc analysis of digital circuits. No graduate credit for electrical engineers. Three lectures and one laboratory period. Prerequisite: 213, 116. FALL, SPRING. [4]

EECE 252. Signal Processing and Communications. AM and FM modulation. Also, advanced topics in signal processing are treated. Prerequisite: 214. SPRING. [3]

EECE 253. Image Processing. The theory of signals and systems is extended to two dimensions. Coverage includes filtering, 2-D FFTs, edge detection, and image enhancement. Three lectures and one laboratory period. Prerequisite: 214. FALL [4]

EECE 254. Computer Vision. Vision is presented as a computational problem. Coverage includes theories of vision, inverse optics, image representation, and solutions to ill-posed problems. Prerequisite: 253. SPRING. [3]

EECE 256. DSP Hardware. Applications of Digital Signal Processing (DSP) chips to sampling, digital filtering, FFTs, etc. Three lectures and one laboratory period. Prerequisite: 214. SPRING. [4]

EECE 257. Automatic Control I. Introduction to the theory and design of feedback control systems, steady-state and transient analysis, stability considerations. Model representation. State-variable models. Credit given for only one of EECE 257 and ME 257. Prerequisite: 213. FALL. [3]

EECE 258. Automatic Control II. Modern control design. Discrete-time analysis. Analysis and design of digital control systems. Introduction to nonlinear systems and optimum control systems. Fuzzy control systems. Two lectures and one laboratory. Prerequisite: 257. SPRING. [3]

EECE 263. Signal Measurement and Analysis. (Also listed as BME 263) Discrete time analysis of signals with deterministic and random properties and the effect of linear systems on these properties. Brief review of relevant topics in probability and statistics and introduction to random processes. Discrete Fourier transforms, harmonic and correlation analysis, and signal modeling. Implementation of these techniques on a computer is required. Prerequisite: 214, Probability and Statistics. FALL. [3]

EECE 264. Electromechanical Energy Conversion I. Theory and design of inductors, transformers, linear actuators, and simple motors. Prerequisite: 213, Math 198. Corequisite: 233. FALL. [4]

EECE 265. Electromechanical Energy Conversion II. Theory and design of rotating machines. Dynamics and control of rotating machines. Prerequisite: 264, 257. SPRING. [4]

EECE 266. Power Electronics. Introduction to solid-state power electronics. Rectifiers, semiconductor switches, AC voltage controllers, controlled rectifiers, choppers, and inverters are studied. Three lectures and one laboratory. Prerequisite: 213, 235; Math 198. SPRING. [4]

EECE 267. Power System Analysis I. Analysis of large transmission and distribution networks. Analysis of power lines, load flow, short circuit studies, economic operation, and stability are introduced. Prerequisite: 213. FALL. [3]

EECE 268. Power System Analysis II. Continued study of load flow, short circuit analysis, economic operation, and stability of power systems. Introduction to protection fundamentals. Prerequisite: 267. SPRING. [3]

EECE 269. Electrical Energy Production. The production of electrical energy by conversion methods, little used today, which will become important as traditional sources of energy are depleted. Emphasis is on conservation, storage, efficiency, and direct energy conversion. Prerequisite: 213, Math 198. No credit for both 269 and ME 265. SPRING. [3]

EECE 271. Introduction to Robotics. (Also listed as ME 271). History and application of robots. Robot configurations including mobile robots. Spatial descriptions and transformations of objects in three-dimensional space. Forward and inverse manipulator kinematics. Task and trajectory planning. Simulation and off-line programming. Prerequisite: Math 194 (or equivalent). ME 141 (or equivalent) recommended. FALL. [3]

EECE 272. Advanced Software Architectures. Tools and techniques for designing complex software systems. Programming language idioms, design patterns, and high-level architecture of systems. Overview of reactive systems, client-server architectures, distributed object systems, object database systems, and design methods. Lectures and seminars. A team-oriented approach is required. Prerequisite: CS 201 and knowledge of the C++ language. SPRING. [3]

EECE 273. Parallel Systems. An overview of the state of the field of Parallel Systems. Examination of the problems and limitations associated with developing parallel systems. Survey of current design trends and approaches for overcoming these problems. Critical evaluation of current and future parallel systems through review of current literature: distinguishing fact from fiction. Hands-on design experience through project work using available state-of-the-art parallel processors. Prerequisite: CS 101 or knowledge of the C language. FALL. [3]

EECE 274. Informatics Engineering. (Also listed as MT 274) The study, invention, and implementation of structures and algorithms to improve communication, understanding, and management of information. Course topics include: learning to access computer-based in-

formation resources, and managing and building information products. An intensive team-oriented project experience is included. Prerequisite: ES 130, CS 201, EECE 112, or consent of instructor. SPRING. [3]

EECE 276. Microprocessors and Microcontrollers II. Advanced course on design and application of microprocessor-based systems. Bus architecture and timing, direct memory access, intelligent peripheral devices, device drivers, language linkage. A structured project is required. Intended for seniors. Three lectures and one laboratory. Prerequisite: 218. FALL. [4]

EECE 277. FPGA Design. Design and applications of field-programmable gate arrays, CAD tools for design, placement, and routing. Practical experience is gained by implementing various designs on prototype FPGA board. A project is required. Prerequisite: EECE 116, EECE 218. SPRING. [3]

EECE 279. Real-Time System Design. Introduction to the design and implementation of real-time systems, including hardware architectures for real-time systems, basic concepts of real-time programming, real-time C programming, and features of real-time supervisors. A project is required. Three lectures and a laboratory. Prerequisite: 218. FALL. [4]

EECE 280. Electronic Circuits II. Integrated circuit analysis and design. High frequency operation of semiconductor devices. Frequency-response and feedback analysis of BJT and MOS analog amplifier circuits, multi-stage frequency-compensated amplifier design. Transient analysis of BJT and MOS digital circuit families. Digital-to-analog and analog-to-digital conversion circuits. Prerequisite: 235. SPRING. [3]

EECE 281. Hybrid Microelectronics. The technologies for fabrication of microelectronic circuits and the interrelationships between material and electronic design are explored. The thick-film circuit is used as a case study to provide practical design experience. Suitable for seniors in electrical and materials science engineering. Two lectures and one laboratory. Prerequisite: 235 or consent of instructor. FALL. [3]

EECE 283. Principles and Models of Semiconductor Devices. Physical principles of operation of the p-n junction, MOS field-effect transistor, and bipolar transistor. Fundamentals of charge transport, charge storage, and generation-recombination; application to the operation of MOSFET and BJT. Device modeling with emphasis on features and constraints of integrated circuit technologies. Prerequisite: 235 or consent of instructor. SPRING. [3]

EECE 284. Integrated Circuit Technology and Fabrication. Introduction to monolithic integrated circuit technology. Understanding of basic semiconductor properties and processes that result in modern integrated circuit. Bipolar and MOSFET processes and structures. Elements of fabrication, design, layout, and applications as regards semiconductor microelectronic technologies. Prerequisite: 235 or consent of instructor. SPRING. [3]

EECE 285. VLSI Design. Integrated circuit and fabrication techniques; CAD tools for design, layout, and verification; parasitic elements and their effects on circuit performance; system-level design experience is gained by completing design and layout phases of a project. Prerequisite: 116, 280 or consent of instructor. FALL. [3]

EECE 286. Advanced MOS Circuit Design. MOS circuit design for modern integrated microelectronics. Emphasis on recent advances in the area of CMOS analog circuits and combined digital-analog circuits. Advanced MOS circuit modeling and computer simulation, MOS circuits for both continuous-time and discrete-time signal processing, dynamic circuits, nonlinear modulators, data conversion circuits, and analog VLSI. Background as well as state of the art material covered via a combination of textbooks and recent journal articles. Prerequisite: 235, 280, 285. SPRING. [3]

EECE 287. Engineering Reliability. Topics in engineering reliability with emphasis on electrical systems. Reliability concepts and models. Risk analysis. System examples. Prerequisite: senior standing. FALL. [3]

EECE 291–292. Special Topics. [Variable credit: 1–3 each semester] (Offered on demand)

EECE 301. Introduction to Solid State Materials. The properties of charged particles under the influence of an electric field, quantum mechanics, particle statistics, fundamental particle transport, and band theory of solids will be studied. FALL. [3]

EECE 302. Electric and Magnetic Properties of Solids. Fundamentals of the electrical and magnetic properties of solids. Dielectric and magnetic properties are discussed. Prerequisite: 301 or equivalent. SPRING. [3]

EECE 303. Electromagnetic Theory. A review of electromagnetic theory using advanced mathematical techniques, electromagnetic wave propagation. [3]

EECE 305. Topics in Applied Magnetism. Selected topics in magnetism, magnetic properties of crystalline and non-crystalline materials; ferrite materials for electronics and microwave applications, resonance phenomena. Prerequisite: 302 or consent of instructor. [3]

EECE 306. Solid-State Effects and Devices I. The semiconductor equations are examined and utilized to explain basic principles of operation of various state-of-the-art semiconductor devices including bipolar and MOSFET devices. FALL. [3]

EECE 307. Solid State Effects and Devices II. The structure of solids, phonons, band theory, scattering phenomena, and theory of insulators. [3]

EECE 311. Systems Theory. Analysis and design of multivariable control systems using state space methods. Stability, controllability, and observability treated. Controllers designed using pole placement, optimal linear regulator, and the method of decoupling. State reconstruction via observers. SPRING. [3]

EECE 312. Digital Control Systems. Signal conversion and processing, z-transform technique, signal flow-graph method, state space approach, stability of digital control systems, time and frequency domain analysis, and digital control design. Prerequisite: 311. SPRING. [3]

EECE 313. Nonlinear Automatic Control Theory. Approximations, time variable parameter systems, phase plane and describing function techniques, direct method of Liapunov. [3]

EECE 314. Optimum Control Systems. Statistical analysis and optimization of systems, Pontryagin's maximum principle, self-optimizing systems, computer optimization. [3]

EECE 317. Active RC Networks. Modeling of active RC networks. Sensitivity analysis. Synthesis of modern filters. [3]

EECE 331. Robot Manipulators. (Also listed as ME 331) Dynamics and control of robot manipulators. Includes material on Jacobian matrix relating velocities and static forces, linear and angular acceleration relationships, manipulator dynamics, manipulator mechanism design, linear and nonlinear control, and force control of manipulators. Prerequisite: 271 (Or equivalent). SPRING. [3]

EECE 341. Electronic Circuits I. Analysis and design of analog electronics circuits with emphasis on integrated circuits. Topics include operational amplifiers, wideband amplifiers, multipliers, and phaselocked loops. FALL. [3]

EECE 342. Electronic Circuits II. Analysis and design of digital electronic circuits with emphasis on integrated circuits. Topics include logic families, semiconductor memories, and the analog-digital interface. SPRING. [3]

EECE 343. Digital Systems Architecture. Architectural descriptions of various CPU designs, storage systems, IO systems, parallel and VonNeumann processors and interconnection networks will be studied. [3]

EECE 350. Neural Networks. (Also listed as BME 350) Theory and application of parallel distributed processing networks. Basic neurobiology, biophysics of active membranes, neural network architectures, training algorithms, optimization, hardware applications. A network applications project is required. SPRING. [3]

EECE 353. Real-Time Application Programming. Introduction to the design of real-time systems, including multiprocessor hardware architectures; basic concepts of real-time, concurrent programming; programming in Modula-2; design methodologies for real-time measurement and control systems; and real-time supervisors and operating systems. FALL. [3]

EECE 354. Advanced Real Time Systems. A continuation of 353. Includes hybrid architectures for combining symbolic and nonsymbolic programming for real-time systems; parallel architectures and programming methods for symbolic programming of dataflow systems, connection machines, actor systems; literature reviews and projects. SPRING. [3]

EECE 355. Intelligent Learning Environments. (Also listed as CS 364) Theories and concepts from computer science, artificial intelligence, cognitive science, and education that facilitate designing, building, and evaluating computer-based instructional systems. Development and substantiation of the concept, architecture, and implementation of intelligent learning environments. Multimedia and web-based technology in teaching, learning, collaboration, and assessment. Prerequisite: CS 260, CS 360, or equivalent. SPRING [3]

EECE 356. Intelligent Robotics. Analysis and design of intelligent robotics using recent research reports. Emphasis on how artificial intelligence is advancing robotics. Obstacle avoidance, hierarchical control, and planning. SPRING. [3]

EECE 357. Advanced Image Processing. (Also listed as CS 357) Basic techniques of image processing. Topics include image formation, digitization, linear shift-invariant processing, feature detection, and motion. Prerequisite: Math 175; programming experience. FALL. [3]

EECE 359. Computer-Aided Design and Manufacturing. Computer-aided design (CAD) and manufacturing (CAM), computer-integrated manufacturing (CIM) and engineering (CIE) with applications to electrical engineering; simulation packages; user interfaces; design methodology. SPRING. [3]

EECE 361. Random Processes. An introduction to the concepts of random variables, functions of random variables and random processes. Study of the spectral properties of random processes and of the response of linear systems to random inputs. Introduction to linear mean square estimation. The emphasis is on engineering applications. FALL. [3]

EECE 362. Detection and Estimation Theory. Fundamental aspects of signal detection and estimation. Formulation of maximum likelihood, maximum a posteriori, and other criteria. Multidimensional probability theory, signal and noise problems, and Kalman filter structure are studied. SPRING. [3]

EECE 363. Digital Signal Processing. Theory of digital signal processing with emphasis on the frequency domain description of digital filtering: discrete Fourier transforms, flow-graph and matrix representation of digital filters, digital filter design, and fast Fourier transform, discrete Hilbert transforms, and effects of finite register length. FALL. [3]

EECE 364. Statistical Signal Processing. The fundamentals of detection and estimation theory for signals are developed. Modern spectral analysis techniques and autoregressive-moving average processes are studied. Prerequisite: 263 or equivalent exposure. SPRING. [3]

EECE 365. Biomedical Pattern Recognition. (Also listed as BME 365) General problems of pattern recognition with applications to biomedical signals and images. Topics such as feature extraction, cluster analysis, discriminant analysis, statistical decision functions, and machine learning will be introduced. Prerequisite: 263 or equivalent. SPRING. [3]

EECE 369. Master's Thesis Research.

EECE 389. Master of Engineering Project.

EECE 391–392. Seminar. [1–1]

EECE 393–394. Advanced Seminar for Ph.D. Candidates. [1–1]

EECE 395–396. Special Topics. Based on research and current developments in electrical engineering of special interest to staff and students. [3–3]

EECE 397–398. Independent Study. Readings and/or projects on advanced topics in electrical engineering under the supervision of the staff. Consent of instructor required. [Variable credit: 1–3 each semester]

EECE 399. Ph.D. Dissertation Research

Engineering Science

I THE Engineering Science Program is flexible and interdisciplinary—offering students the opportunity to select a unique program of study to meet special interests or objectives which are not easily reached through traditional engineering programs. The program is under the supervision of the Engineering Science Committee consisting of faculty members Robert J. Bayuzick, Jimmy L. Davidson, Donald L. Kinser, Taylor G. Wang, Weng Poo Kang, Robert E. Stammer, Jr., (Chair), Robert A. Weller, and James E. Witting. Students who choose Engineering Science recognize the growing importance of a broad-based interdisciplinary engineering background. Many students choose a program of study in applied physics, management of technology, communication of science, engineering and technology, or materials science; however, students may develop unique plans of study to specialize in areas for which facilities and faculty competence exist but which are not covered within a single existing degree program at Vanderbilt. Engineering Science graduates may establish careers in engineering or science, interface with engineers (e.g., in marketing and sales), or use their analytical and problem-solving skills to build future professional careers.

Defined areas of concentration exist in applied physics, management of technology, communication of science, engineering and technology and materials science and engineering. Individual programs have been developed for students interested in careers in engineering mathematics,

environmental engineering, transportation engineering, business administration, teaching, technical communications, oceanography, hospital administration, and other areas requiring nontraditional combinations of engineering courses. Because of the flexible nature of the Engineering Science programs of study, ABET accreditation has not been sought for these programs of study.

Integrated Program in Management. Through a cooperative arrangement with the Owen Graduate School of Management, students majoring in engineering science may be admitted to the Owen School after their junior year. The first year of course work in management is taken during the normal senior year, meeting senior year requirements in engineering science. This reduces by one year the amount of time normally required to obtain the two degrees. Pursuit of the integrated program is contingent upon admission to the Owen School. Automatic admission is in no way implied, nor is special consideration given to engineering students. Further information may be obtained from the coordinator of the Program in Management of Technology.

Management of Technology. Management of Technology is an interdisciplinary program of study designed to give students the tools to manage competently technology development and innovation, to enhance manufacturing quality and productivity in a competitive international environment, and to implement these objectives successfully in an organization. Management of technology links engineering, science, and the management disciplines. In addition to the core science and math courses required of all engineering students, topics of study include entrepreneurship, human resources management, finance in technology-based organizations, total quality management, communications, and manufacturing.

Applied Physics. Applied physics is an important subdiscipline of applied science and is expected to increase in significance in the years to come. It is unique in its generality, overlapping almost all of the traditional engineering disciplines. Individualized courses of study in applied physics can be structured through the Engineering Science Program in cooperation with the Department of Physics and Astronomy.

Communication of Science, Engineering, and Technology. Many careers that are attractive to graduates of the Engineering Science program require the communication of the often complex concepts of engineering and science to people who are not technically trained. The "Communication of Science, Engineering, and Technology" interdisciplinary program prepares engineering students for these communication intensive careers in areas such as technical consulting, high-technology marketing and sales, environmental law, and journalism. The program combines traditional engineering and science courses with communications and humanities courses in a flexible curriculum. Engineering Science majors may select from a set of program electives identified by the faculty committee of the School of Engineering and the College of Arts and Science that supervises the program.

Minors. Students may also elect to pursue a minor consisting of at least five courses of at least three credit hours each within a recognized area of knowledge. Such a minor offers students more than a casual introduction to an area, but less than a major or concentration. A minor for which all desig-

nated courses are completed with a least 2.0 average will be entered on the transcript at the time of graduation. Approved minors are offered in Management of Technology, Materials Science, and most disciplines within the College of Arts and Science. Students must declare their intention to pursue minors by completing forms available in the Student Records Office of the School of Engineering.

Curriculum Requirements

Students must complete a minimum of 120 hours. Each student must identify a minimum of 30 hours, including ES 210W but not counting certain introductory-level courses, that directly contribute to meeting stated career goals. The preparation provided by this 30-hour package, together with a solid foundation in basic engineering courses, provides the engineering science student with a strong and useful career base.

1. Basic science (16 hours). Chemistry 102a and 104a plus 12 hours from the group Bio Sci 110 a--b; Chemistry 102b/104b; Physics 116a--b, 117a--b, or 121a--b; or MSE 150 with two courses in a single discipline.

2. Mathematics (14 hours). Required courses (8 hours): 155a--b (qualified students may substitute an honors mathematics sequence). Electives (6 hours): to be selected, with consent of adviser, from the list of math courses numbered 175 and above, except 180.

3. Engineering courses (39 hours). Required courses (13 hours) include CS 101; ES 130, 210W and CE 180 or BME 101 or ME 141. Credit is allowed for only one of CE 180, BME 101, or ME 141.

Engineering science electives (at least 12 hours) to be selected from:

BME 102, 210, 251, 252.

CHE 151, 152, 216, 223, 225, 230, 231, 232, 242, 280, 282.

CE 160, 195, 203, 207, 216 general

CE 182, 230, 231, 233, 234 structural

CE-210, 211, 212, 260, 269, 271, 272, 273, 275, 276, 279, 280 environmental

CE 160, 225, 255, 256, 257, 258 transportation

CS 201, 212, 214, 250.

EECE 200 or 112, 116, 213, 214, 233, 235, 257.

ES 260a, 260b, 290

MT 214, 215, 216, 227, 230, 231, 242, 246, 265, 274, 275, 278

MSE 150, 232, 246, 250, 251, 252, 256, 275

ME 160, 171, 190, 200, 201, 205, 213, 220a, 220b, 224, 234, 242, 248, 255, 257, 260, 262

Credit allowed for only one course from each of these groups:

BME 102 or ME 220a

CE 203 or ME 224

CE 195 or ME 160

Engineering electives: Any Engineering School courses may be used to complete the 39-hour requirement, provided at least 9 hours are in one related area.

4. Humanities–social science electives (15 hours). To be selected in accordance with the Distribution Requirements under *Degree Programs in Engineering*.

5. Technology–society elective (3 hours). To be selected in accordance with the Distribution Requirements under *Degree Programs in Engineering*.

6. Open electives (6 hours).

7. Program electives (27 hours). To be selected in such a way as to provide a meaningful sequence of courses. Course work must be planned in advance and approved by the faculty adviser.

ES 130. Introduction to Computing in Engineering. A laboratory-based introduction to engineering concepts using computers, network communications, and teamwork. Problem solving in both visual-based and computational-based computer environments.

ES 151. Introduction to Applied Physics. (Also listed as Phys. 151) Principles of atomic, molecular, and condensed matter physics. Applications in lasers, electronics and photonics, superconductivity, semiconductor processing, and nonlinear wave mechanics. Prerequisite: One year of physics and one year of calculus. FALL. [3]

ES 153. Impact of Our Nation's Space Program on Society. This course offers first-year students an opportunity to understand the impact of our nation's space program on society. It will address the substance of the space program as well as its impact on science, technology, medicine, and economics. Students will be exposed to how public policy regarding the space program has been determined, and how technical decisions are made. Technology-Society elective. Prerequisite: None. No credit for junior and senior engineering students. FALL. [3]

ES 155. Engineering: Stone Age to 1918. The evolution of engineering thought and the design process using examples of engineering projects from antiquity through World War I. Engineering solutions to human requirements for food, water, shelter, transportation, communication, and defense are examined. Technology-Society elective. Prerequisite: None. No credit for junior and senior engineering students. FALL. [3]

ES 157. Technology and the Environment. An introduction to the types of environmental problems caused by our technological society and the constraints that environmental protection regulations place on technology. History and philosophy of the development of an environmental ethic. Case studies of industry-specific impacts. Economic development and environmental protection. Laws, regulations, and conflict resolution process. Technology-Society elective. Prerequisite: None. No credit for junior and senior engineering students. FALL. [3]

ES 159. Engineering Failure: The Dark Side of Technology. The course provides first-year students with a grasp of the serious consequences of engineering failures and how they impact society. Perspectives are drawn from case histories. The societal cost of failure, underlying human values, the issue of liability, causes of failure, and failure prevention strategy are examined. Technology-Society elective. Prerequisite: None. No credit for junior and senior engineering students. FALL. [3]

ES 190 The Evolution of Modern Technology. The context and impact of the major technological developments since the eighteenth century. SPRING (even numbered years). [3] Eakin and Kinsler.

ES 210W. Technical Communications. Instruction and practice in written and oral communication. Emphasis is on organization and presentation of information to a specific audi-

ence for a specific purpose. Course will include writing and editing reports of various lengths, preparing and using visual aids, and presenting oral reports. Required of all CS, EE, CmpE, and ES students. SPRING. [3]

ES 248a–248b. Undergraduate Research. Offers students who have an independent study program the opportunity to pursue it under the direction of a faculty member with expertise in the area of study. FALL, SPRING. Variable credit 1–3 each semester, not to exceed a total of 6.

ES 260a–260b. Concepts and Methods of Applied Science. Conventional and computer-assisted methods of scientific problem solving, emphasizing techniques important in advanced mechanics (including relativistic systems), electromagnetism and optics, quantum and statistical mechanics and data analysis. Extensive use is made of the computer software system *Mathematica*®. Prerequisite: general physics and mathematics through differential equations. Prior exposure to symbolic computation is desirable. [3–3]

ES 290. Special Topics. Technical elective courses of special current interest. No more than six semester hours of these courses may be credited to the student's record. Prerequisite: consent of instructor. FALL, SPRING. [1–3]

Management of Technology

E

DIRECTOR David M. Dilts

PROFESSORS EMERITI Robert W. House, Barry D. Lichter, Robert T. Nash

PROFESSORS Mark David Abkowitz, Jimmy L. Davidson, David M. Dilts, Kazuhiko Kawamura, Frank L. Parker

ASSOCIATE PROFESSOR Gautam Biswas

RESEARCH ASSOCIATE PROFESSOR Susumu Kurokawa

ADJUNCT ASSOCIATE PROFESSORS John A. Bers, Andrew J. Dozier, Benjamin T. Jordan, Jr.

ADJUNCT INSTRUCTOR Craig A. Stevens

I MANAGEMENT of Technology is an interdisciplinary program of study designed to give students the understanding to manage technology development and innovation, to enhance manufacturing quality and productivity in a competitive international environment, and to implement these objectives successfully in an organization. Management of technology links engineering, science, and the management disciplines.

The program in Management of Technology helps to prepare students to work more effectively in developing, implementing, and modifying technologies and systems. Technological change in fields such as computer-aided design, manufacturing, and information systems demands engineers with knowledge of both technology and management. Undergraduates interested in management of technology have two options. They may earn the B.E. degree in another engineering discipline with a minor in management of technology or, they may earn the B.S. degree in engineering science with management of technology as their area of concentration. Courses in man-

agement of technology may be approved for minor credit in several programs. Detailed information may be obtained from the program director.

Management of Technology Minor

The management of technology minor is designed to provide a student majoring in an undergraduate engineering program with a working knowledge of the fundamentals of business and engineering management. Management of technology courses include such topics as management of the high technology enterprise, engineering economics, public policy, business psychology, finance, accounting, project planning and control, marketing, personnel, manufacturing, and entrepreneurship.

The minor program in management of technology consists of 15 hours of course work, some of which may be taken as electives associated with the student's major program. Five courses are required: two introductory courses and the remaining three chosen from a list of electives.

Program Requirements

The student must take the following two courses:

- MT 214 Technology, Business, and Public Policy
- MT 215 Introduction to Management of Technology

The student must select three of the following courses:

- MT 216 Engineering Economy
- MT 227 Applied Behavioral Science
- MT 230 Technology and Human Values
- MT 231 Principles and Management of Technological Innovation
- MT 242 Technology Marketing
- MT 246 Program and Project Management

Area of Concentration in Management of Technology

Students who are pursuing the B.S. degree in engineering science may select courses in management of technology to satisfy requirements for either engineering electives (15 hours) or program electives (27 hours). Courses in management of technology are often selected in combination with courses in economics to satisfy the program electives.

MT 150. Dynamics of Change: Impacts of Technology. An introductory course concerned with the interrelations among changes in society and advance in technologies in health care, information processing, control systems, etc. Elementary techniques for analyzing problems and for devising strategies for treating them are developed. Cases are presented to illustrate and confirm the techniques. No credit for junior and senior engineering students. Technology-society elective. FALL. [3]

MT 214. Technology, Business, and Public Policy. Technology, business, and public poli-

cies studied through the development of conceptual frameworks and their application to case studies. Examines the development of current technologies, their related industrial organizations, emerging technologies, and impact on business. Prerequisite: sophomore standing or above or consent of instructor. Technology-society elective. SPRING. [3]

MT 215. Introduction to Management of Technology. A study of the problems encountered by managers in the planning, organizing, and allocating of resources and in directing, and controlling technical activities. Prerequisite: junior standing or above. FALL. [3]

MT 216. Engineering Economy. (Also listed as CE 216 and ChE 216) Economic evaluation and comparison of alternatives: interest, periodic payments depreciation, criteria, and analytical procedures in investment decision-making, plant feasibility, and cost estimating. FALL. [3]

MT 227. Applied Behavioral Science. The “people part of management.” Focus is on employees, customers, owners, and managers, with emphasis on skills and experience needed by young engineers to cope with management responsibilities in technical enterprises. FALL. [3]

MT 230. Technology and Human Values. Provides the understanding necessary to engage in discussions and participate in decisions about the uses of technology by society. To achieve this requires an examination of moral problems arising out of the impact of technology on man. Readings and class discussions of important works in ethics and political philosophy are undertaken along with readings and case studies of the impact of technology on the individual and on society. Prerequisite: junior standing or above. Technology-society elective. SPRING. [3]

MT 231. Principles and Management of Technological Innovation. Principles of technological innovation presented and examined through case studies. The roles of industry, public institutions, users, and certain factors that facilitate or impede innovation are examined. Prerequisite: Junior standing or above or consent of instructor. Technology-society elective. FALL. [3]

MT 242. Technology Marketing. Marketing industrial and technologically-based products and services. Marketing activities from the inception of a product to end use are covered. Business marketing strategy, segmentation, distribution, and personal selling are explored through lectures, readings, cases, and individual student projects. FALL. [3]

MT 246. Program and Project Management. Methods for planning programs and projects. Organization structures and information management for project teams. Communications between project teams and clients, government agencies, and others. Motivational factors and conflict resolution. Budget/schedule control. Prerequisite: junior standing or above. SPRING. [3]

MT 255. Societal Systems: Planning, Policy, and Complexity. An analysis of the complexity common to and inherent in many societal systems. The development of methods for structuring that complexity and for understanding and managing it. Modeling in planning and management, policy making, and systems engineering. Behavioral considerations in applying interpretive structural modeling and other methods for managing the generation and analysis of ideas. Prerequisite: junior standing or above. Technology-society elective. [3] (Not currently offered)

MT 257. Seminar. [Variable credit: 1–3 each semester] (Not currently offered)

MT 261. Materials Resources Policy Studies. A broad survey of engineering and technology affecting availability and use of materials that are derived principally from non-fuel min-

eral resources. The concept of criticality and the criteria for identifying critical materials are developed. Consideration of rational use of materials and formulation of materials policy are discussed in light of social, economic, political, and technological climates that may exist. Prerequisite: junior standing or above. Technology-society elective. [3] (Not currently offered)

MT 262. Energy Resources Policy. Study of past, present, and future trends of energy resource usage, energy demands, and energy technology development, including impacts on social, ecological, and economic domains—with discussions of relevant policy formulations. Prerequisite: consent of instructor. Technology-society elective. [3] (Not currently offered)

MT 265. Environmental Risk Management. (Also listed as CE 275) Development of environmental safety programs for technological operations. Focuses on defining an environmental risk management process and program implementation, performing risk assessments, determining and selecting appropriate risk reduction strategies, and influencing risk management decisions internally and externally. Extensive use of case studies drawn from the chemical and energy-producing industries. SPRING. [3]

MT 274. Informatics Engineering. (Also listed as EECE 274) The study, invention, and implementation of structures and algorithms to improve communication, understanding, and management of information. Course topics include: learning to access computer-based information resources and managing and building information products. An intensive team-oriented project experience is included. Prerequisite: ES 130, CS 201, EECE 112, or consent of the instructor. SPRING. [3]

MT 275. Technology Assessment and Forecasting. Methods of assessing technological changes in the social, political, ecological, economic, legal, and institutional environments. Technology forecasting is treated in detail: intuitive thinking, the exploratory techniques of trend extrapolation, the normative techniques of relevance and perspective trees, scenario writing, etc. Government and industrial reports are used as case studies and a term project is required. Prerequisite: junior standing or above. Technology-society elective. [3]

MT 278. The Technical Basis for Environmental Policy (Also listed as CE 278) The engineering and economic foundations of environmental policy formulation, mathematical, computer modeling of the environment, and economic valuation of environmental quality. Treatment and site cleanup processes, fundamental equations of environmental engineering, the notion of market failure, economics of monitoring and enforcement. SPRING. [3]

MT 280. Introduction to the Management of Manufacturing. An overview of the state of the art of manufacturing technologies and processes. Also provides an overview of robotics, automation, information technologies, and flexible manufacturing systems. Will investigate the various organizational impacts related to the changing manufacturing work environment. FALL. [3]

MT 295a–295b–295c–295d. Engineering Field Practice. An opportunity to participate in-engineering field practice, under faculty supervision, outside the University and receive academic credit. Balanced by participation in on-campus seminars. One or more written reports required each term. [Variable credit: 1–4 each semester, with a maximum of 6 hours counting toward the minimum requirements of the baccalaureate degree.]

MT 310. Theory and Practice of Managing Technology. Introduction to concepts of purchasing, manufacturing, marketing, and product development in the engineering intensive firm. Product evolution, continuous improvement in manufacturing processes, quality management, relations with suppliers, and relations with customers are covered. FALL. [3]

MT 311. Theory and Practice of Managing Technological Change. Significant changes in products, manufacturing processes, inputs and markets made by engineering-intensive firms are studied. Interactions between the manufacturing, engineering, and marketing functions, as well as interactions with users are brought out through case studies. SPRING. [3]

MT 312. Probabilistic Methods in Engineering Design. (Also listed as CE 310) Applications of probabilistic methods in the analysis and synthesis of engineering systems. Review of basic probability concepts, random variables and distributions, modeling and quantification of uncertainty, testing the validity of assumed models, linear regression, and correlation analyses. Monte Carlo simulation, reliability analysis, and reliability-based design. Emphasis on applications in civil, mechanical, and chemical engineering. Prerequisite: Math 194 or consent of instructor. FALL [3]

MT 321. Technical Project Management. Organizational and human factors involved in the management of technical projects. Systems life-cycle approach used in characterizing project tasks and work flow. Influence of organization's structure, behavior, and processes. Skills needed to develop project team and direct and control project work. Project work definition, scheduling, budgeting, control, and performance evaluation methods. SPRING. [3]

MT 322. Quality Management. Fundamentals of quality management and continuous improvement in the technology-based company. Influence of organizational culture on the use of specific methods, and approaches toward achieving quality. Customer value concepts and measurement; management of quality to enhance the customer's value. Prerequisite: 310, or consent of instructor. SUMMER. [3]

MT 330. Marketing in the Technology Enterprise. Role of marketing in the technology-based company to maximize return on technologies in the marketplace. Translating core technologies into customer technologies in the marketplace. Translating core technologies into customer value, managing the risks of commercialization, developing market plans, and implementing them. Prerequisite: 310, or consent of instructor. SPRING. [3]

MT 359. Emerging Information Systems Applications. (Also listed as CE 359) An introduction to emerging information systems technologies and their role in improving productivity and efficiency in managing engineering operations. Design of integrated approaches to enhance the speed, accuracy, reliability, and quantity of information available for decision support. Emphasis on case studies of innovative applications in transportation and manufacturing, leading to individual and group projects requiring new product development. Prerequisite: background in transportation or manufacturing operations, or consent of instructor. FALL. [3]

MT 369. Master's Thesis Research. [3]

MT 386. New Ventures Based on Technology and Engineering. Approaches to the identification and evaluation of opportunities. Risks faced by entrepreneurs. Market assessment, capital requirements, and acquisition of venture capital. Legal structures and their tax implications for starting technology-based businesses. Prerequisite: MT 310. FALL. [3]

MT 389. Master of Engineering Project.

MT 391–392. Special Topics. Special topics of interest to staff and students based on research or current developments in management of technology. [Variable credit: 1–3 each semester]

Materials Science and Engineering

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I TECHNOLOGICAL advances and, indeed, our very lives are dependent and limited by the materials that are available to us. The impact of materials on all of history is obvious, for example, when it is noted that technological progress in a given era is demarcated by the materials available in the era. The Stone Age was followed by the Bronze Age and the Iron Age. The present period can be identified as the Materials Age.

High performance materials are in demand throughout the engineering world. Metals, ceramics, and plastics, and composites of these are required in various applications to continue the forward movement of technology. Further progress demands engineers who have an understanding of materials science and engineering. The U.S. National Science Policy has identified materials science and engineering as a critical area and has specified advancements in the processing and performance of materials as a national initiative. To accomplish these tasks, there is a need for specialists in materials science and engineering as well as those who have an interdisciplinary outlook, combining other engineering disciplines with materials science and engineering.

The Materials Science and Engineering program at Vanderbilt University brings together developments in metals and alloys, ceramics, glasses, electronic materials, polymers, and composites with the fundamental elements of the relationship between properties and structure, the thermodynamics of materials, the physics and chemistry of solids, the physics and chemistry of liquids, surface science and materials characterization. In keeping with the diverse needs in the engineering world, two degree paths involving Materials Science and Engineering are available.

Students may pursue the B.S. degree in Engineering Science with materials science and engineering as their area of concentration or they may earn the B.E. degree in another engineering discipline with a minor in materials science and engineering. The Master of Engineering, an advanced professional degree for engineers, is also offered.

Facilities. The program draws on the specialized equipment of many research activities. The Center for Microgravity Research and Applications is pursuing research in biotechnology, nonlinear acoustics, fluid dynamics, containerless processing, undercooling, and directional solidification. Groups of

faculty members are working on the electronic and optical properties of glasses, the ion-implantation of materials, and on electrochemical and corrosion science.

The laboratories house x-ray diffraction facilities, an Hitachi S-4200 high resolution scanning electron microscope with an energy dispersive x-ray spectrometer, an analytical Philips CM20T transmission electron microscope, and a Leybold Heraeus x-ray photoelectron spectrometer, as well as standard mechanical testing equipment. In addition, electron paramagnetic resonance, optical and IR spectrometers, a vibrating sample magnetometer, and other facilities for determining the electrical, magnetic, and optical properties of materials are available. Corrosion and electrochemistry facilities are computer-interfaced and include a Solartron interface, PAR potentiostats, a Nicolet digital-recording oscilloscope, and an ATS slow-strain-rate system.

There are electromagnetic and acoustic levitators, high and low temperature directional solidification furnaces, a high-gravity centrifuge and drop tubes. A computer-controlled, servohydraulic, axial-torsion testing system with high speed data acquisition can produce complex multi-axial stress states. A 300 kV accelerator is used for ion implantation and fundamental impact studies. The Vanderbilt Free Electron Laser Laboratory provides a unique environment for the study of the interaction of intense, tunable radiation in the 2–10 micron wavelength range with matter.

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Materials Science and Engineering Concentration

The B.S. degree in Engineering Science with a concentration in Materials Science and Engineering requires satisfaction of the curriculum requirements of Engineering Science, within which the student must take MSE 150 and MSE 250 plus 28 hours selected from the following list of courses.

MSE 209b	Materials Science and Engineering Seminar
MSE 209c	Materials Science and Engineering Undergraduate Research
MSE 210ab	Special Topics
MSE 232	Strength and Structure of Engineering Materials
MSE 246	Thermodynamics and Reaction Kinetics
MSE 251	Mechanical Behavior of Engineering Materials
MSE 252	Ceramics
MSE 256	Surfaces and Thin Films
MSE 275	Diffraction Methods in Materials Science
CHE 290	Semiconductor Materials Processing (Special Topics)
CHE 290	Molecular Engineering (Special Topics)
Chem 235	Surface and Polymer Chemistry
CE 295	Mechanics of Composite Materials
EECE 283	Principles and Models of Semiconductor Devices
EECE 284	Integrated Circuit Fabrication and Technology
ME 205	Manufacturing Processes
Phys 223	Thermal and Statistical Physics

Phys 225ab	Introduction to Quantum Physics and Applications
Phys 251ab	Introductory Quantum Mechanics
Phys 254	Physics of Condensed Matter

Materials Science and Engineering Minor

The minor in materials science and engineering is designed to provide the student with an understanding of materials. The goal is to complement and add to the student's major in one of the other engineering disciplines for an interdisciplinary approach to problem solving.

The minor program in materials science and engineering requires 16 hours of program courses, of which 7 hours are devoted to MSE 150 and MSE 250.

Program Requirements

MSE 150	Materials Science I
MSE 250	Materials Science II

The remaining 9 hours can be chosen from the following list of courses.

MSE 209c	Materials Science and Engineering Undergraduate Research
MSE 210ab	Special Topics
MSE 246	Thermodynamics and Reaction Kinetics
MSE 251	Mechanical Behavior of Engineering Materials
MSE 252	Ceramics
MSE 256	Surfaces and Thin Films
MSE 275	Diffraction Methods in Materials Science
CHE 290	Semiconductor Materials Processing (Special Topics)
CHE 290	Molecular Engineering (Special Topics)
CE 295	Mechanics of Composite Materials
EECE 283	Principles and Models of Semiconductor Devices
EECE 284	Integrated Circuit Fabrication and Technology
ME 205	Manufacturing Processes

MSE 150. Materials Science I. Concepts of materials science developed from an understanding of the atomic and molecular structure of materials and their relationship to the properties of matter. Mechanical, electrical, physical, chemical, and magnetic properties of metals, ceramics, organics, composites, and semiconductors are covered. Corequisite: Math 155b and Chem 102a or consent of instructor. Three lectures and one laboratory. SPRING. [4] (Offered 2000/01)

MSE 209b. Materials Science and Engineering Seminar. Involving individual experimental, analytical, or design projects. A written final report is required. FALL. [Variable credit 1–3]

MSE 209c. Materials Science and Engineering Undergraduate Research. Open to selected senior engineering students wanting to do independent research. A formal written report is required. SPRING. [3] (Offered 2000/01)

MSE 210ab. Special Topics. Technical elective courses of special current interest. No more than two semesters of this course may be credited to the student's record. Prerequisite: consent of instructor. [Variable credit: 1–3 each semester] (Offered on demand)

MSE 232. Strength and Structure of Engineering Materials. A laboratory supplement to Mechanics of Materials, CE 182. Students conduct experiments on the strength behavior of materials and simple engineering structures. Includes: tension and bending, fasteners, photoelastic analysis of stress concentrators, strain gage instrumentation to determine principal stresses, bending and deflection curves for simple beams, loaded columns, and short struts. Corequisite: CE 182. FALL. [1]

MSE 246. Thermodynamics and Reaction Kinetics. Fundamental principles of physical chemistry, concerned with thermodynamics and reaction kinetics, dealing mainly with metals and alloys and their compounds. Applications to extraction of metals, high temperature oxidation, electrodeposition, and corrosion are considered. Prerequisite: MSE 150 and an introductory course in thermodynamics. [3]

MSE 250. Materials Science II. Combines a physical chemistry approach with development of concepts of microstructures applied to materials, principally ceramics, glasses, metals, polymers, and composites. Includes a brief survey of relevant areas of thermodynamics and kinetics; phase equilibria; characterization of phases; diffusion, solidification, and resulting structure and properties; solid-state transformations; synthesis and modern processing techniques. Prerequisite: MSE 150. FALL. [3]

MSE 251. Mechanical Behavior of Engineering Materials. Deformation modes of materials with a wide range of structural perfection from both the continuum-mechanics and atomic-level approach. The dislocation concept of plastic deformation is introduced and used to explain the relationships between microstructure and mechanical properties. The phenomena of strain hardening, creep, fatigue, and fracture. Prerequisite: MSE 150. [3]

MSE 252. Ceramics. The relationship between atomic structure and the processing and applications of ceramic materials. Discussion of classical ceramic bodies, glasses, refractories, cements, and electrical ceramics. SPRING. [3]

MSE 256. Surfaces and Thin Films. Introduction to modern surface and thin film modification and analysis. Topics include sputtering, ion implantation, backscattering spectrometry, secondary ion mass spectrometry, electron spectroscopies, surface structure and nuclear reaction analysis. Applications in semiconductor device fabrication are discussed. Prerequisite: MSE 150, or consent of instructor. [3]

MSE 275. Diffraction Methods in Materials Science. Principles and application of x-ray analysis and transmission and scanning electron microscopy as applied to the study of materials. Stereographic projections, x-ray and electron scattering, crystal structure determination, fluorescent analysis, image contrast theory, and specimen preparation. Two lectures and one laboratory. Prerequisite: MSE 150. [3]

MSE 310. Atomic Arrangements in Solids. A basic understanding of the atomic arrangements observed in metals, ceramics, semiconductors, glasses, and polymers. Lattice geometry and crystal symmetry are discussed in detail and these concepts are used to describe important crystal structures. Nanocrystalline materials are also covered. An introduction to scattering theory and diffraction phenomena provides insight into the analytical methods used by materials scientists for structural characterization. FALL. [3]

MSE 340. Transitions in Condensed Systems. Fundamentals of condensation and phase transformations in condensed systems and the genesis of microstructure. Specific aspects of thermodynamics that are the foundation for understanding phase transformations. Reaction rate theory and a treatment of the relevant areas of diffusion. Nucleation and growth theory and its applications to compositional and structural transitions. Review of diffusionless transformations in the solid state. FALL [3]

MSE 343. Introduction to Electron Microscopy. Principles and applications of transmission electron microscopy in the study of materials. Electron scattering, image contrast theory, operation of electron microscope, and specimen preparation. Use of the electron microscope in experimental investigations. Two lectures and one laboratory period. Prerequisite: consent of instructor. FALL [3]

MSE 344. Fracture. Theoretical and engineering aspects of the fracture process. Includes continuum, fracture concept, notch theory, statistical analysis of fracture, linear elastic fracture mechanics, and the metallurgical aspects of fracture. Emphasis on predicting the onset of fracture under conditions of brittle behavior, fatigue, stress corrosion, quasi-brittle, and ductile failure processes. Design concepts using linear elastic fracture mechanics will be developed. Prerequisite: consent of instructor. [3] (Currently not offered)

MSE 345. Structure of Glasses. The application of atomic structure to a study of physical properties of amorphous systems. Glass melting, thermal processing, viscosity, optical properties, electric properties, and other topics. Emphasis on structure-property relationships. Glass systems discussed include silicate, borate, and phosphate, as well as nontraditional glass-forming systems. Prerequisite: consent of instructor. [3]

MSE 349. Solid State Diffusion. Fick's laws, Kirkendall effect, mechanisms of diffusion, movement of defects. Particular emphasis will be placed on the oxidation of metals and the associated time laws. Prerequisite: MSE 340. [3]

MSE 350. Mechanical Behavior of Materials. The more advanced analyses of the major forms of mechanical behavior of metals, ceramics, and polymers in the form of crystals, glasses, multi-phase mixtures and composites. The elastic behavior of anisotropic crystals and composites and the viscoelastic behavior of polymers. Examination of plastic behavior including important dislocation mechanisms, analyses of cyclic plasticity, creep, and the strength of polymers and composites. The mechanisms of ductile fracture, creep fracture, and the fatigue fracture. The fundamentals of fracture mechanics are introduced and used to treat the origins of cleavage fracture, fracture toughness, and the ductile-to-brittle transition. Throughout, the underlying mechanics and the relations between microstructure and properties are emphasized. [3] Staff.

MSE 369. Master's Thesis Research. FALL, SPRING [0] Staff.

MSE 391–392. Special Topics. Based on faculty research projects and highly specialized areas of concentration. FALL, SPRING [Variable credit: 1-3 each semester] (392 offered 2000/01)

MSE 397–398. Seminar. A required noncredit course for all graduate students in the program. Topics of special interest consolidating the teachings of previous courses by considering topics which do not fit simply into a single course category. FALL, SPRING [0-0] Staff.

MSE 399. Ph.D. Dissertation Research. FALL, SPRING [0-12]

Mechanical Engineering

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I THE vitality of our nation depends upon innovation in the design of new machines, devices to satisfy society's needs, engines to produce power efficiently, equipment to condition the environment of our buildings, and the systems to use and control these engineered products. Mechanical engineers are involved in solving problems by originating design concepts, developing products and processes of manufacture, and designing hardware and the systems needed to satisfy society's demands. Mechanical engineers work in virtually all industries.

The study of mechanical engineering requires a basic understanding of mathematics, chemistry, physics, and the engineering sciences. Mechanical engineering education emphasizes solid mechanics; dynamics of machines; material behavior; power producing and environmental conditioning processes and machines; control of dynamics of machines; and the synthesis, development, evaluation, and optimization of designs of devices and systems.

Degree Programs. The Department of Mechanical Engineering offers the B.E., M.Eng., M.S., and Ph.D. degrees in mechanical engineering.

The curriculum in mechanical engineering leading to a Bachelor of Engineering degree provides a broad-based engineering education with opportunities for the student to elect courses in areas of study related to any industry and, with careful planning of the elective courses, to achieve some specialization. The Mechanical Engineering program prepares an individual to become a practicing engineer who can participate fully in the engineering activities of design, building, operation, production, maintenance, safety, marketing, sales, research, and administration.

Undergraduate Honors Program. See the *Special Programs* chapter for general requirements of the professional Honors program in mechanical engineering. In general, rising juniors are admitted, although seniors may be accepted in special cases. Honors candidates choose their technical elective courses with the advice and consent of the department chair. Each candidate is expected to take ME 209c and at least 6 hours of graduate courses, including one 300-level course. A formal written report on the candidate's research is required. Honors candidates shall meet all Engineering School requirements in the nontechnical areas. The diploma designation is Honors in Mechanical Engineering.

Facilities. Facilities are available for studies in thermodynamics, combustion, heat power, refrigeration, air conditioning, fluid flow, heat transfer, nuclear engineering, design, mechanical vibrations, acoustics, photo optics, instrumentation, and biomechanics. Subsonic and supersonic wind tunnels are used in general fluid dynamics studies. Laser diagnostic equipment is available for studies of the fundamental behavior of combustion processes. These are augmented by special equipment for investigations into the mechanism of fluid turbulence. Instrumentation for conducting experiments on mechanical systems is available to measure accurately a wide range of variables. The department also maintains various shops for fabrication of experimental equipment and for instruction.

Curriculum Requirements

The B.E. degree in mechanical engineering requires a minimum of 127 hours, distributed as follows.

1. Mathematics (17 hours). Required courses: 155a–155b, 175, 198 (qualified students may substitute an honors mathematics sequence). Required elective: one from courses numbered 194 or above, except 252.

2. Basic Science (16 hours). Required courses: Chemistry 102a, MSE 150 (or Chemistry 102b), Physics 116a–b.

3. Engineering Science (26 hours). Required courses: ES 130; CE 180, 182; CS 101; EECE 112; ME 190, 220a, 224, MSE 232.

4. Humanities–social science electives (15 hours). To be selected from the approved lists (see Distribution Requirements in the *Degree Programs in Engineering* chapter). Advanced-level courses must be included in at least one area. At least one “W”-designated course must be included. Eligible for pass-fail credit. See faculty adviser for departmental restrictions.

5. Open electives (6 hours). Eligible for pass-fail credit. See faculty adviser for departmental restrictions.

6. Technology–society elective (3 hours). (See Distribution Requirements.) Students may elect to take an additional humanities–social science elective instead of the technology–society elective.

7. ME core (29 hours). ME 160, 171, 200, 201, 213, 220b, 234, 242, 243, and 248.

8. Technical electives (6 hours). To be selected from any technical or scientific field; at least 3 hours must be above the sophomore level. See faculty adviser for departmental restrictions.

9. Professional (ME) depth (a minimum of 9 hours). See faculty adviser for recommended courses. Each student must choose at least 9 hours of advanced level ME elective courses approved by the student's ME faculty adviser.

Specimen Curriculum for Mechanical Engineering

		Semester hours	
		FALL	SPRING
FRESHMAN YEAR			
ME 160†	Mechanical Engineering Modeling	–	3
	Other freshman courses (see the engineering freshman-year specimen curriculum)	14	12
		14	15
SOPHOMORE YEAR			
Math 175	Analytic Geometry and Calculus	3	–
Math 198	Elementary Differential Equations	–	3
Physics 116b	General Physics	4	–
CE 180	Statics	3	–
ME 190	Dynamics	–	3
EECE 112	Electrical Engineering Science	–	3
ME 171	Instrumentation Laboratory	–	2
ME 220a	Thermodynamics I	–	3
CS 101	Programming and Problem Solving	4	–
	Elective	3	3
		17	17
JUNIOR YEAR			
ME 200	Kinematics	3	–
ME 201	Design of Machine Elements	–	3
MSE 232	Strength and Structure of Engineering Materials	1	–
ME 234	System Dynamics	4	–
ME 220b	Thermodynamics II	3	–
ME 224	Fluid Mechanics	–	3
CE 182	Mechanics of Materials	3	–
	Elective	3	6
	Math elective*	–	3
		17	15
SENIOR YEAR			
ME 242	Design Synthesis	3	–
ME 243	Design Projects	–	3
ME 248	Heat Transfer	3	–
ME 213	Energetics Laboratory	2	–
	Electives*	9	12
		17	15

*Mathematics elective may be chosen from courses numbered 194 or above 198, except 252.

*See faculty adviser for recommended advanced level ME elective courses.

†Mechanical engineering majors are encouraged to take ME 160 in the spring of their freshman year in lieu of CS 102.

ME 141. Statics-Dynamics. An introduction to the principles of statics and dynamics. Credit is offered for only one of the courses ME 141, BME 101, and CE 180. Corequisite: Math 155b. FALL, SPRING, SUMMER. [3]

ME 160. Mechanical Engineering Modeling. A study of design, modeling, and graphical presentation for mechanical engineering components, processes, and systems, using computer-aided techniques and methods. Two lectures and one lab. No credit for juniors or seniors. Prerequisite ES 130. SPRING. [3]

ME 171. Instrumentation Laboratory. Techniques associated with engineering measurements, curve fitting, presentation, and analysis of data. Corequisite: Math 175. SPRING. [2]

ME 190. Dynamics. The principles of dynamics (kinematics and kinetics) of particles and rigid bodies. Mechanical vibrations. Introduction to continuous media. Prerequisite: CE 180 or ME 141, Physics 116a. Corequisite: Math 198. FALL, SPRING, SUMMER. [3]

ME 200. Kinematics. The kinematics of mechanisms using graphical and numerical methods. Computer applications and techniques. Prerequisite: 190; Corequisite: CS 101. FALL. [3]

ME 201. Design of Machine Elements. Application of the principles of mechanics of materials to the analysis and synthesis of machine elements. Prerequisite: CE 182; recommended: 200. SPRING. [3]

ME 205. Principles of Materials Processing. Basic engineering principles of the various manufacturing processes, theory, and practice. Two lectures and one three-hour laboratory or field trip. Prerequisite: junior standing. SPRING. [3]

ME 209a. Mechanical Engineering Seminar. Each student selects a topic of interest, with approval of the faculty; conducts a literature search; and presents formal written and oral reports on the findings. Prerequisite: junior standing. FALL, SPRING. [1]

ME 209b. Mechanical Engineering Seminar. Involving individual experimental, analytical, or design projects approved by the faculty. A written final report is required. Prerequisite: junior standing. FALL, SPRING. [2]

ME 209c. Mechanical Engineering Undergraduate Research. Open to selected senior mechanical engineering students wanting to do independent research. A formal written report is required. Prerequisite: junior standing. [3] (Offered on demand)

ME 210a–b. Special Topics. Technical elective courses of special current interest. No more than two semesters of this course may be credited to the student's record. Prerequisite: consent of instructor. [Variable credit: 1–3 each semester] (Offered on demand)

ME 213. Energetics Laboratory. Experimental methods in heat transfer, fluid mechanics, and thermodynamics. Prerequisite: junior standing. FALL. [2]

ME 220a. Thermodynamics I. Application of the first and second laws to energy transformation processes and properties of technologically important materials. Prerequisite: Physics 116a; Math 175. FALL, SPRING. [3]

ME 220b. Thermodynamics II. Application of principles of thermodynamics to vapor and gas cycles, mixtures, combustion, and compressible flow. Prerequisite: 220a; corequisite: Math 198. FALL. [3]

ME 224. Fluid Mechanics. (Also listed as CE 203) Physical properties of fluids, fluid statics; equations of conservation of mass, energy, and momentum; dimensional analysis and similarity; principles of real fluid flows: boundary layer effects, flow through pipes, flow in open channels, drag forces on bodies. Prerequisite: 141 or 190; Math 198. Graduate credit for students in geology. FALL, SPRING. [3]

ME 234. Systems Dynamics. Energy-based modeling of dynamic mechanical, electrical, thermal, and fluid systems to formulate linear state equations, including system stability, time domain response, and frequency domain techniques. Three lectures and one three-hour laboratory. Prerequisite: 190, Math 198. SPRING. [4]

ME 242. Design Synthesis. Development of the design process: problem definition, design specifications, solution identification, idea synthesis, and design completion. Critical elements include proposal writing, liability, ethics, project planning, communication, coordination, and contracting. Individual design synthesis study projects required. Prerequisite: 201. FALL. [3]

ME 243. Engineering Design Projects. Each student participates in a major group design project. Lectures will cover case studies and topics of current interest in design. Prerequisite: 242. SPRING. [3]

ME 248. Heat Transfer. Steady-state and transient heat transfer by conduction, forced and free convection and radiation, including heat transfer by boiling and condensing vapors. Application is made to practical design problems. Prerequisite: 220a, 224. FALL. [3]

ME 255. Engineering Design and Optimization. A mathematical modeling approach to design with an emphasis on computational strategies to seek optimal design. Concepts of feasibility and optimality. Models for decision making under risk and under uncertainty. Corequisite: 242. FALL. [3] (Offered on demand)

ME 256. Advanced Strength of Materials. Mathematical basis for analysis of stress and strain appropriate to design of mechanical elements and systems. Topics include: inelastic behavior, durability, thermoelastic behavior, thin walled elements, composite materials and stability. Prerequisite: 201, Math 198. [3] (Offered on demand)

ME 257. Engineering Systems Analysis. A study of dynamic systems and controls, including operational techniques, root locus method, Nyquist method, state variable representation to describe mechanical, hydraulic, thermal, and electrical systems; analysis and synthesis. Credit is given for only one of ME 257 and EECE 257. Prerequisite: 190; Math 198; EECE 112. [3] (Offered on demand)

ME 259. Engineering Vibrations. Theory of vibrating systems and application to problems related to mechanical design. Topics include single degree of freedom systems subject to free, forced, and transient vibrations; systems with several degrees of freedom, methods of vibration suppression and isolation, and critical speed phenomena. Prerequisite: 190, Math 198. FALL. [3]

ME 260. Energy Conversion I. Energy resources, use, and conservation are studied. The fundamentals of positive displacement machinery, turbo-machinery, and reactive mixture are introduced and used to examine various forms of power-producing systems. Prerequisite: 220b, 224. FALL. [3]

ME 261. Basic Airplane Aerodynamics. Includes aerodynamic forces, airfoil characteristics from both theory and experiment, aircraft experiment, aircraft performance, longitudinal and lateral stability and control. Prerequisite: 224. FALL. [3]

ME 262. Environmental Control. A study of heating and cooling systems, energy conservation techniques, use of solar energy and heat pumps. Prerequisite: 220b; corequisite: 248. SPRING. [3]

ME 264. Internal Combustion Engines. A study of the thermodynamics of spark ignition and compression ignition engines; gas turbines and jet propulsion. Prerequisite: 220b. SPRING. [3]

ME 265. Direct Energy Conversion. The principles and devices involved in converting other forms of energy to electrical energy. Conversion devices: electro-mechanical, thermoelectric, thermionic, fluid dynamic, and fuel cell. No credit for both 265 and EECE 269. Prerequisite: 220a. SPRING. [3] (Offered 2000/2001 and alternate years)

ME 268. Introduction to Gas Dynamics. An introduction to the study of compressible flow from subsonic to supersonic flow regimes. Includes shock waves, expansion waves, shock tubes, and supersonic airfoils. Prerequisite: 220b, 224. SPRING. [3] (Offered 2001/2002 and alternate years.)

ME 270. Advanced Mechanism and Design. Concepts of the underlying geometry of constrained motion, both infinitesimal and finite, as used in the design of the motions of machine elements. Topics include kinematic invariants, centrode geometry, the Euler-Savary equation, the cubic of stationary curvature, pole triangles and quadrilaterals, Burmester theory, and the theory of screws. Prerequisite: 200. [3] (Offered on demand)

ME 271. Introduction to Robotics. (Also listed as EECE 271) History and application of robots. Robot configurations including mobile robots. Spatial descriptions and transformations of objects in three-dimensional space. Forward and inverse manipulator kinematics. Task and trajectory planning, simulation and off-line programming. Prerequisite: 190, Dynamics, and Math 194. FALL. [3]

ME 275. Introduction to Finite Element Analysis. Development and solution of finite element equations for solid mechanics and heat transfer problems. Introduction to commercial finite element and pre- and post-processing software. Two lectures and one three-hour laboratory each week. Prerequisite: CE 182, Math 198. SPRING. [3]

ME 280. Advanced Dynamics of Mechanical Systems. Development of methods for formulating differential equations to model mechanical systems, including formalisms of Newton-Euler, Lagrange, and virtual work methods to two- and three-dimensional systems. Prerequisite 190 and Math 198. [3] (Offered 2000/2001 and alternate years)

ME 284. Modeling and Simulation of Dynamic Systems. Incorporates bond graph techniques for energy-based lumped-parameter systems. Includes modeling of electrical, mechanical, hydraulic, magnetic and thermal energy domains. Emphasis on multi-domain interaction. Prerequisite: 234, Systems Dynamics. FALL. [3]

ME 313. Topics in Stress Analysis. An investigation of thermal stress, transient stress, and temperatures in idealized structures; consideration of plasticity at elevated temperatures; and some aspects of vibratory stresses. Prerequisite: consent of instructor. [3] (Offered on demand)

ME 315. Advanced Instrumentation. Analysis of measurement system with attention to errors. Reconstruction of measured data from output information, accounting for distortion, the length of record, and the type of data, whether continuous, discrete, or sampled. [3] (Offered on demand)

ME 325a. Advanced Fluid Dynamics I. A study of the kinetics of inviscid and viscous fluids. Use of the constitutive equations for study of steady or transient, and laminar or turbulent flows. Application to numerous engineering problems. Prerequisite: 224 or equivalent. FALL. [3]

ME 325b. Advanced Fluid Dynamics II. A continuation of 325a: the phenomenological theories of turbulence are applied to boundary layer flow. The fundamentals of turbulence, including correlation functions and spectra are examined, and existing methods of measurement are discussed. Prerequisite: 325a or consent of instructor. SPRING. [3]

ME 326. Gas Dynamics. Study of compressible fluid flow from subsonic to supersonic regimes in confined regions and past bodies of revolutions. Includes heat transfer, frictional effects, and real gas behavior. Prerequisite: 224. SPRING. [3] (Offered 2001/2002 and alternate years)

ME 327. Energy Conversion Systems. An advanced study of energy conversion systems that include turbomachinery, positive displacement machinery, solar energy collection and combustion, with consideration for optimizing the systems. Prerequisite: consent of instructor. FALL. [3]

ME 328. Propulsion Systems. A study of turbojet, ramjet, rocket motor, and advanced propulsion systems. The influence of component performance upon the overall system is emphasized. Preliminary designs of propulsion systems and criteria of performance are developed. Prerequisite: Consent of instructor. [3] (Offered on demand)

ME 331. Robot Manipulators. (Also listed as Electrical and Computer Engineering 331) Dynamics and control of robot manipulators. Includes material on Jacobian matrix relating velocities and static forces, linear and angular acceleration relationships, manipulator dynamics, manipulator mechanism design, linear and nonlinear control, and force control manipulators. Prerequisite: 271. SPRING. [3]

ME 350. Nonlinear Control Theory. Introduction to the concepts of nonlinear control theory. Topics include phase plane analysis, nonlinear transformations, Lyapunov stability, and controllability/observability calculations. A multidimensional geometric approach to these problems is emphasized. Prerequisite: 257, Math 194. [3] (Offered 2000/2001 and alternate years)

ME 353. Design of Electromechanical Systems. Analog electronic design for purposes of controlling electromechanical systems, including electromechanical sensors and actuators, analog electronic design of filters, state space and classical controllers, and transistor-based servoamplifiers and high voltage amplifiers. Significant laboratory component with design and fabrication circuits to control electromechanical systems. Implementation of digital controllers. Prerequisites: 234, 257. FALL [3] (Offered 2001/2002 and alternate years)

ME 355. Engineering Design and Optimization. Methods for optimal design of mechanical systems are developed and applied. Nonlinear optimization strategies are implemented through progressive exercises on unconstrained and constrained optimization problems with single and multiple design variables. Students explore the implementation of basic algorithms through computer-based tools and available Fortran (or C) subroutines. Feasibility and optimality conditions and design problem formulation are emphasized. Computer literacy and some programming experience are required. Each student is expected to complete a major design project in their area of technical interest. [3] (Offered on demand)

ME 356. Mechanical System Reliability. Design of mechanical systems subject to reliability constraints. Emphasis on response surface modeling, variance reduction concepts, probabilistic design methods and advanced simulation concepts with application development using reliability software. Prerequisite: 355 and either CE 310 or Math 233. [3] (Offered on demand)

ME 359. Advanced Engineering Vibrations. The development and application of Lagrange's equations to the theory of vibrations. Nonlinear systems and variable spring characteristics are analyzed by classical methods and by digital computer techniques. Applications to the design of high speed machines are emphasized. Prerequisite: 259; Math 234, 246. [3] (Offered 2001/2002)

ME 360. Statistical Thermodynamics. Old and modern quantum theory, including H atom, rigid rotor, and harmonic oscillator. Atomic and molecular structure and spectra. Maxwell-Boltzmann statistical model for ideal, chemically reacting, electron, or photon gas. Introduction to Gibbs method. Prerequisite: 220b. FALL. [3] (Offered 2000/2001 and alternate years)

ME 362. Selected Topics in Thermodynamics. This course includes such topics as non-equilibrium thermodynamics, relaxation phenomena, and linear passive systems. Prerequisite: 220b. [3] (Offered on demand)

ME 363. Conduction and Radiation Heat Transfer. A comparative study of available methods for solution of single and multidimensional conduction heat transfer problems. Both steady and transient problems are considered. Mathematical and numerical methods are stressed. Radiant exchange between surfaces separated by non-participating media is studied. Numerical methods are developed and discussed for non-isothermal surfaces and combined radiation and conduction problems are solved. Prerequisite: 248. SPRING. [3] (Offered 2000/2001 and alternate years)

ME 364. Convection Heat Transfer. A wide range of topics in free and forced convection is discussed. Solutions are carried out using analytical, integral, and numerical methods. Internal and external flows are considered for both laminar and turbulent flow cases. Convection in high speed flow is also studied. Prerequisite: 248, 325a. [3] (Offered 2001/2002 and alternate years)

ME 365. Special Topics in Heat Transfer. Topics such as boiling, condensation, ablation and heat transfer in MHD flows, rarefied gases, and two-phase flows are studied. Prerequisite: consent of instructor. FALL. [3]

ME 366. Combustion. Introduction to combustion processes. Topics include combustion thermodynamics, chemical kinetics, premixed flame theory, diffusion flame theory, ignition and detonation. Prerequisite: 220b, 224. [3] (Offered 2000/2001 and alternate years)

ME 369. Master's Thesis Research.

ME 389. Master of Engineering Project.

ME 391–392. Special Topics. A course based on faculty research projects and highly specialized areas of concentration. [Variable credit: 1–3 each semester]

ME 397–398. Seminar. [0–0]

ME 399. Ph.D. Dissertation Research. [Variable credit]

Peabody College

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Education and Human Development at Vanderbilt

PEABODY College traces its lineage to Davidson Academy, organized in 1785. Its emergence in 1875 as a college dedicated to the training of teachers and its relocation to a new campus in 1914 were made possible largely through the beneficence of George Peabody, America's great educational philanthropist. Peabody College, recognized for more than a century as one of the nation's foremost independent colleges of teacher education, was merged with Vanderbilt University in the summer of 1979.

Peabody offers undergraduate programs for the preparation of early childhood, elementary, and secondary school teachers and teachers in the field of special education. The undergraduate major in human and organizational development prepares students for a variety of careers in business, human service organizations, government agencies, or non-profit organizations, as well as graduate or professional programs in business, counseling, divinity, education, health promotion, law, or medicine. The undergraduate major in child development is designed for students who wish to study children (infancy through adolescence) and the major family, cultural, peer, school, and neighborhood contexts in which they live. The major provides a strong undergraduate background in the social and behavioral sciences and constitutes excellent preparation for graduate or professional study in such fields as psychology, medicine, nursing, and education. The undergraduate major in cognitive studies provides the opportunity for a unique study of the process of learning, thinking, and decision making. In addition, the college has extensive offerings at the post-baccalaureate level in many areas of education, educational administration, counseling, psychology, human development, and special education.

Education and human development students, as part of the University community, are in daily contact with students in other fields, increasing the opportunity for mutual exchange and study. The combination of strong professional preparation and liberal arts education serves to maintain the Peabody tradition of quality education graduates, who serve in elementary and secondary schools, colleges and universities, and state departments of education across the nation and beyond.

Today about 1,500 students are enrolled at Peabody, with more than one-third of them in post-baccalaureate professional degree programs preparing for careers as classroom teachers and professionals in other areas related to education and human development.

All teacher education programs are approved by the National Council for the Accreditation of Teacher Education (NCATE).

Facilities

John F. Kennedy Center for Research on Human Development

The Kennedy Center is one of fourteen national centers for research on mental retardation and related aspects of human development. The primary mission is to conduct collaborative research, training, and information dissemination on behavioral, intellectual, and brain development. The Center's aims are to understand human development better, to prevent and solve developmental problems, and to enable persons with developmental disabilities to lead better lives.

Scientific inquiry is organized into five institutes that correspond to functional research groups of investigators whose members interact regularly, sharing theoretical orientations and methodologies, but vary widely in their academic backgrounds. These five institutes are the Institute for Developmental Neuroscience; the Institute on Development and Psychopathology; the Institute on Biobehavioral Development and Genetics; the Institute on Prevention, Early Intervention, and Families; and the Institute on Education and Learning. A Kennedy Center component that is especially relevant to students' academic and professional training is the Susan Gray School for Children, a large early intervention program for young children whose future development is at risk because of disabilities or a history of child abuse or neglect.

Kennedy Center investigators use their scientific tools to engage societally important questions of immediate and long-term concern. Among the Kennedy Center's highest priorities are preventing youth violence, preventing and treating substance abuse and other mental health problems, educational restructuring, preventing and overcoming consequences of prenatal insults; and maximizing the potential of people with developmental disabilities. Kennedy Center scientists attempt to develop ways to prevent mental retardation and related developmental problems, e.g., through genetic and neuroscience research, or to intervene early in life to minimize unnecessarily adverse outcomes for children at risk for developmental disabilities, through early language intervention, social skills training, and cognitive interventions for violence-prone children. Other researchers intervene in public schools to improve educational outcomes for children at risk for school failure. Still others strive to maximize the potential of people born with developmental disabilities, through environmental design, intervention in educational, vocational, and other community settings, or through a combination of behavioral and pharmacological interventions. These themes recur across institutes.

The Kennedy Center provides extensive support services to enhance the research productivity of its investigators, all of whom are Vanderbilt faculty members. The Kennedy Center's mission requires participation of investigators from a variety of disciplines including psychology, special education, early childhood education, pediatrics, nursing, psychiatry, cell biology,

pathology, pharmacology, hearing and speech sciences, biology, biomedical engineering, and medical ethics. These investigators, approximately half of whom are Peabody faculty, have active programs of research that include opportunities for student involvement.

The Kennedy Center provides training experiences for graduate students who work in preceptorship relationships to faculty members in research, especially in the research training programs in mental retardation, special education, developmental psychopathology, and visual sciences. A student's role advances over time from that of research assistant to that of collaborator and finally to that of independent investigator, with continuing guidance from the major professor. Because of these relationships, trainees complete their graduate study with an unusually broad range of research experience.

Learning Technology Center

The Learning Technology Center (LTC) is a research, development, and service organization that is focused on the effective uses of advanced technology for improving teaching and learning. The LTC brings together faculty and staff in the areas of cognitive psychology, education, computer science, and instructional design. The Center conducts research and designs instructional programs for learners across the ages from early childhood through adulthood. Content areas for projects include literacy, mathematics, science, and social studies. The LTC also works closely with practicing teachers to understand and to improve instructional methods for preservice teacher education. In addition, the LTC provides technical assistance and equipment to faculty, students, and staff, for instruction and research projects. The Center's activities are facilitated by special equipment and resources such as a video editing suite, multimedia development laboratories, and high-tech presentation rooms. For additional information on the LTC, look on the World Wide Web at <http://peabody.vanderbilt.edu/ltc/general/>. The Learning Technology Center is located in the Social Religious Building.

Center for Education Policy

The Peabody Center for Education Policy at Vanderbilt University was established in fall 1994 to improve education by promoting policy, practices, and professional and public understanding of challenges facing education in the United States. The Peabody Center's interests span the continuum of public and private education, encompassing preschool, postsecondary, adult education, lifelong learning, and national research policy.

The Peabody Center's intellectual and policy agenda includes five domains:

Popular Commitment to Education in the United States. The Peabody Center undertakes sustained, comprehensive efforts to illuminate and understand public beliefs, attitudes, and opinions about education. The Peabody Center is strategically committed to knowledge of relevant

- public opinion and its policy consequences.
- Education Reform and the Policy Process.** The Peabody Center offers policy makers, practitioners, parents, and others additional resources with which to resolve issues associated with Goals 2000, national standards, state systemic initiatives, restructuring, technology integration, privatization, and other matters.
- Transfer of Knowledge.** Recognizing that better bridges between and among education and research disciplines are needed, the Peabody Center is engaged in efforts to integrate important education reform efforts. A key goal is widening dialogue among cognitive scientists, curriculum designers, instructional technology experts, and others responsible for preparing scholars and education practitioners.
- Education, Race, and Diversity.** The Peabody Center is engaged in a research agenda that will contribute to formulation of policies, priorities, and practices by which the nation might more effectively address problems associated with inclusion, community, social cohesion, intergroup relations, tolerance, and the valuation of diversity.
- Public–Private Partnerships in Education.** The Peabody Center recognizes the need to chronicle expansion of public–private partnerships, contracting out, and privatization. Investors, regulators, policy makers, and parents, want to know the educational value of individual products and services, as well as the prospects for securities underlying these ventures. The Center addresses these and related issues.

The Peabody Center views its most influential policy constituencies as falling into five primary groups: families and communities, education professionals, policy makers, scholars, and foundations. The Center's services, broadly defined, include communications, analysis, and research.

The Undergraduate Program

PEABODY College offers the Bachelor of Science degree with majors in early childhood education, elementary education, secondary education, special education, cognitive studies, child development, and human and organizational development. These undergraduate programs are designed to prepare students for professional careers in their chosen fields. Programs for Peabody students include course work in a Liberal Education Core, a professional core, a major area of specialization, and electives. Peabody also provides professional education courses for College of Arts and Science students who want to prepare for teacher licensure.

The Bachelor of Science degree is granted on the basis of 120 semester hours of college work with a final grade point average of 2.000, and completion of the Liberal Education Core and the requirements of the major.

Liberal Education Core Program

In pursuit of breadth of knowledge and understanding about the world in which they live, all undergraduates complete the requirements of the Liberal Education Core program. This Liberal Education Core component of all Peabody undergraduate majors is intended to provide students with a solid foundation in the arts and sciences. The core curriculum incorporates the study of human conditions that are universal. The Liberal Education Core involves study in the following areas:

Communications. The study of language in its written and spoken forms. The study of computer language.

Mathematics. The study of mathematical concepts and procedures.

Social Sciences. The study of the past—both the heritage of the United States and the more global human story. The study of growth and development of individuals.

Humanities. The study of the universal language of the arts.

Natural/ Health Sciences. The study of scientific process and interrelationships among the sciences.

Through the study of these universal subjects, concepts, and modes of thought, students gain a broad foundation transferable to their futures. They will continue to grow within society and the classroom and will look at problems from different perspectives while maintaining curiosity.

Courses identified to fulfill the Liberal Education Core requirement for

each undergraduate major are listed in the current program descriptions that follow and in Peabody's *Undergraduate Handbook*.

Courses used to satisfy these core requirements may also be counted toward the fulfillment of requirements in an academic major. Special topics courses are ordinarily not acceptable for meeting Liberal Education Core requirements. These courses require prior approval as substitute courses. Independent study courses are not acceptable for meeting Liberal Education Core requirements.

Transfer students may use credits from other colleges to fulfill Peabody's Liberal Education Core requirements if the credits are equivalent to the courses offered at Vanderbilt. The use of transfer courses to satisfy Liberal Education Core requirements must be approved by the Dean's office. For transfer students, credits are evaluated when the student enrolls at Peabody in order to determine which transfer courses will substitute for Peabody's Liberal Education Core requirements. Requirements still to be fulfilled will be noted at that time.

Licensure for Teaching

PEABODY offers programs leading to teacher licensure in the following areas: *early childhood (grades PreK–3), elementary (grades K–8), and secondary education (grades 7–12) with endorsement in English, math, French, Latin, Spanish, German, biology, chemistry, physics, earth science, history, economics, political science, psychology, and sociology.* Offered by the Department of Teaching and Learning.

Special education—modified (LD, BD, EMR for grades K–12), comprehensive (multiple/severe disabilities for grades K–12), visual impairment (grades PreK–12), hearing impairment (grades PreK–12), or early childhood/preschool (grades PreK–1). All five of these programs are offered by the Department of Special Education.

Students seeking licensure may enroll in Peabody College, the College of Arts and Science, Blair School of Music, or the School of Engineering. There is a special physics/computer technology endorsement program available to Engineering Science students. In all cases, most of the liberal arts course work is taken in the College of Arts and Science, and the professional education course work is taken at Peabody College.

All students completing the teacher education program at Vanderbilt are strongly advised to apply for a license in Tennessee whether or not they plan to teach in this state. In addition, licensure is available by application in other states. The student is responsible for applying for licensure through the Office of Teacher Licensure located in the Wyatt Center. Each state has its own set of application forms and procedures for licensure; information is available in the Office of Teacher Licensure.

Licensure requirements continue to undergo revision. Students *must meet licensure requirements in effect at the time of their program completion*, which may be different from requirements in effect at the time they entered the program. Each year, teacher education students should consult the current Vanderbilt *Undergraduate Catalog* or the *Peabody Undergraduate Handbook* available in the Office of Administration and Records in the Wyatt Center.

SCREENING

There are two points in each teacher education program when undergraduates must complete applications for screenings by departmental faculty. Screening reviews, described below, are important checkpoints that allow successful students to advance in the program. Attainment of 2.5 (4.0) cumulative grade point average and completion of required courses do not automatically qualify a student for continuation in the program.

Faculty evaluation of a student's qualifications for continuation in a teacher education program include academic and performance factors such as the following:

1. *Dependability* (as evidenced by good attendance in classes and practica and the completion of required assignments and procedures on time)

2. *Professional and ethical behavior* (honesty, acceptance of responsibility, emotional maturity, etc.)

3. *Attitude and interpersonal skills* (including the ability to work with children and with peers)

4. *Academic competence*. (It is possible for a student to meet minimum grade point requirements and pass all courses and still have specific academic weaknesses which might cause denial of screening applications.) Students seeking teacher licensure must be approved by each department through which licensure is sought. Secondary licensure candidates should contact an adviser or the director of undergraduate studies in the appropriate Arts and Science department(s) to be informed of any specific departmental requirements or standards.

5. *Teaching competence* (as evidenced by successful completion of practica requirements). It is possible for a student to meet minimum grade point requirements and pass all courses and still have specific performance weaknesses which might cause denial of screening applications.

These criteria rest on the professional judgment of faculty members. Whether a student meets them or not is determined by a vote of appropriate faculty. Undergraduate students seeking secondary education licensure must be approved by the Department of Teaching and Learning faculty and also by the faculty of College of Arts and Science department(s) for the A&S major(s).

Screening deadlines are *October 1* and *February 1* (Note: If either of these dates falls on a weekend, the deadline is moved to the following Monday.) Deadlines are firm; late applications will not be accepted. Application forms are available in departmental offices and should be returned to those offices no later than the deadline. (Note: Screening II applications require additional documents when submitted. See specific requirements on the applications.)

Students will be notified in writing of results of the faculty vote. In instances where there is a negative decision, the student wishing to appeal must do so in writing to the chairperson(s) of the department(s) denying the application. If the initial decision is upheld and the student wishes to contin-

ue the appeal, a written petition should be filed with the Administrative Committee of Peabody College.

Screening I (Formal Admission to an Undergraduate Teacher Education Program)

Each student seeking teacher licensure must be formally admitted to the teacher education program(s) by applying for Screening I review by the faculty of the department(s) in which endorsement(s) is/are sought. Screening I applications must be approved by the faculty no later than the first semester of the junior year. With consent of the student's faculty adviser(s), application for Screening I may be made during the second semester of the sophomore year. Students who transfer more than 60 hours to Vanderbilt from another institution must apply for admission to the teacher education program by the screening deadline of their second semester at Vanderbilt.

Criteria for Screening I (formal admission to teacher education) are:

A. Specific Academic Criteria

1. Test scores (SAT 1020 or ACT 22 OR passing scores on Pre-Professional Skills Tests/CBT)
2. Minimum cumulative grade point average of 2.5 (4-point scale)
3. Successful completion of at least two of the required professional education courses with a minimum grade of C- in all professional education courses
4. Minimum grade of C- in writing and speech courses used to meet the Communications requirement in the Liberal Education Core

B. Specific Faculty Evaluative Criteria

The faculty will consider the criteria of dependability, professional and ethical behavior, attitude and interpersonal skills, and teaching competence as itemized at the beginning of the Screening section.

Screening II (Admission to Student Teaching)

Admission to Student Teaching is not automatic when prerequisite course work and field experiences have been completed. The semester prior to the one during which a student is to student teach, the student must submit a Screening II application to the appropriate department(s) and request student teaching placements. Deadlines are *October 1 for fall semesters, February 1 for spring semesters*. At the time of screening application, the student should be enrolled in any remaining prerequisite courses. No course work may be taken during the semester of student teaching and seminar.

After an initial review in the Office of Teacher Licensure, the Screening II application and other submitted materials will be considered by departmental faculty according to the following criteria for Screening II approval to student teach:

A. Specific Academic Criteria

1. Formal admission to a teacher education program granted (completion of Screening I)
2. Approved program of studies on file (see Program of Studies)
3. Second semester junior standing (for student teaching in the fall of the senior year)
or first semester senior standing (for student teaching in the spring of the senior year)
4. Successful completion (C- or above) of all courses required and prerequisite to student teaching
5. Minimum cumulative grade point average of 2.5 (4.0 scale)
6. Satisfactory performance (C- or above) in coursework in areas in which teacher licensure is sought

B. Specific Faculty Evaluative Criteria

The faculty will consider the criteria of dependability, professional and ethical behavior, attitude and interpersonal skills, and teaching competence as itemized at the beginning of the Screening section.

Each Screening II application must be accompanied by additional documents, depending on the endorsement(s) being sought. Screening II applicants who are approved to student teach will receive notification of their student teaching placements no later than during the Student Teacher Orientation (Monday before VU classes begin on Wednesday for the semester).

Students who have passed Screening II are assigned two specific student teaching placements in the Nashville area. Students in elementary education may apply to the Department of Teaching and Learning for one student teaching placement in Cambridge, England.

Program of Studies

Upon admission to teacher education (passing Screening I), each student in consultation with the education adviser must prepare an acceptable program of studies that constitutes the student's plan to take all courses and field work required for the degree and teacher licensure. The student should obtain the program of studies form in departmental offices and should meet with the faculty adviser to complete the form and to receive initial approval.

Once the program has been filed and approved in the Office of Administration and Records, changes in the program may be made with approval of the student's faculty adviser and department chair. Students should submit a program of studies for approval during the semester in which they register for their 60th hour.

Program of studies forms are available from the staff in the department for the education or special education major. Students may not apply for Screening II until the program of studies is approved and on file in the Office of Administration and Records.

Student Teaching

Vanderbilt students seeking teacher licensure must successfully complete a 15-week fall or spring semester of full-time student teaching in two different grade levels in Nashville area public schools and must be recommended for licensure by the supervisors of student teaching and departmental faculty. Prior to the start of student teaching, all prerequisite courses must have been completed, the cumulative GPA must be at least 2.5, and the appropriate departmental faculties must have voted to approve the candidate for student teaching during the previous semester as part of the Screening II application process. **The Tennessee State Department of Education and Metropolitan Nashville Public Schools prohibit student teachers from taking courses during student teaching.** See the *Undergraduate Handbook* provided by the Peabody Office of Administration and Records for details.

Application for Teacher Licensure and University Recommendation for Licensure

All students completing the teacher education program at Vanderbilt are strongly advised to apply for a license in Tennessee whether or not they plan to teach in this state. In addition, licensure is available in most other states. The student is responsible for applying for licensure through the Office of Teacher Licensure located in 305 Wyatt Center. Each state has its own set of application forms and procedures for licensure; information is available in the Office of Teacher Licensure.

To be licensed through Vanderbilt's teacher education program, a graduate must earn a positive licensure recommendation from the University. The University's decision to recommend a candidate is based upon the following:

1. Maintaining the grade point average required for admission to the teacher education program (2.500 on a 4.000 scale)
2. Achieving the state minimum score on all required parts of the PRAXIS Series (scores must be sent to the Vanderbilt Office of Teacher Licensure—code R 1871).*
3. Receiving a positive recommendation from the student's department as a result of the student teaching experience (*Pass* in student teaching does not guarantee a favorable recommendation)

Vanderbilt is approved by the National Council for Accreditation of Teacher Education (NCATE).

*Testing requirements are changing almost annually; check instructions in the Office of Academic Affairs before registering to take the exams.



Academic Regulations

1

Honor System

All academic work at Vanderbilt is done under the honor system. (See the Honor System section in Life at Vanderbilt.)

Academic Advising

Each Peabody undergraduate is assigned an academic adviser who is familiar with his or her major. This adviser is generally a faculty member in the major department and is knowledgeable about the courses the student will need to complete his or her major. The adviser helps the student determine the courses that are most suitable for the chosen major and serves as a mentor to the student.

However, enrollment in appropriate courses to fulfill degree requirements and knowledge of University policies and regulations regarding courses are the responsibility of the individual student.

Class Attendance

Students are expected to attend all scheduled meetings of classes in which they are enrolled; they have an obligation to contribute to the academic performance of all students by full participation in the work of each class. At the beginning of the semester, instructors explain the policy regarding absences in each of their classes, and thereafter they report to the office of the Dean of the College the name of any student whose achievement in a course is being adversely affected by excessive absences. In such cases, the Dean, in consultation with the instructor, takes appropriate action, which may include dropping the student from the class; students dropped after the deadline for withdrawal receive the grade *F*. Class attendance may be specified as a factor in determining the final grade in a course, and it cannot fail to influence the grade even when it is not considered explicitly.

Course Load

During the fall and spring semesters, a student must take at least 12 hours of course work to qualify as a full-time undergraduate student. Students wishing to carry more than 18 hours must obtain the approval of the Dean's office. All undergraduate students are assumed to be full-time students for

the purpose of administering probation and retention policies. A student who for reasons of health, family, or outside employment wishes to enroll in Peabody as a part-time student must obtain permission from the Dean. The academic standing of such students will be considered on an individual basis.

Residence Requirement

Students must complete a minimum of 60 hours in residence at Vanderbilt including the final two semesters. Former students whose Peabody or Vanderbilt undergraduate course work is more than five years old must complete a minimum of 30 hours of current Vanderbilt course work.

Credit by Examination

In certain circumstances students may be awarded course credit by departmental examination. (This procedure is distinct from the award of credit through the College Board Advanced Placement Tests taken prior to a student's first enrollment at Vanderbilt or at another college.)

Students wishing to earn credit by departmental examination should consult the registrar concerning procedures. To be eligible, students must be carrying a minimum of 12 hours and be in good standing. Exceptions to these requirements may be granted on petition to the Peabody Undergraduate Administrative Committee.

Students will be given the grade Pass in courses for which credit is received by examination. These courses will not be used in determining grade point averages.

Students enrolled for at least 12 hours are not charged tuition for hours for which credit by examination is awarded, so long as the amount of credit falls within the allowable limits of an 18-hour tuition load, including no-credit courses and courses dropped after the change period. Students in this category must pay a fee for the cost of administering the examination. Full-time students with a tuition load exceeding 18 hours and students taking less than 12 hours pay tuition at the regular rate, with no additional fee.

Undergraduate Enrollment in 300- and 3000-level Courses

All students wishing to take 300- and 3000-level courses for either undergraduate or graduate credit must obtain the written approval of their academic advisers, the instructor of the course, and the Office of Undergraduate Academic Affairs. Undergraduates wishing to receive approval for graduate credit in 300- and 3000-level courses also see below.

Undergraduate Enrollment for Post-Baccalaureate Credit

A qualified Vanderbilt University senior undergraduate may enroll in

courses approved for post-baccalaureate credit and receive credit which, upon the student's admission into a Peabody College professional program, may be applicable toward the professional degree. The principles governing this option are as follows:

1. Work taken under this option is limited to those 200- and 300-level courses approved for post-baccalaureate credit, excluding thesis and dissertation research courses and similar individual research and readings courses.
2. Such work must be in excess of that required for the bachelor's degree.
3. At the time of registration, the student must have a *B* average in all prior work to be counted toward the bachelor's degree, or a *B* average in all prior work to be counted toward the undergraduate major, or a *B* average in the preceding two semesters.
4. Undergraduate students wishing to count for post-baccalaureate credit courses taken under this option must consult the instructor of each course and must, at the time of registration, declare their intention on a form available at the Office of Undergraduate Academic Affairs.
5. The student's total course load (graduate plus undergraduate courses) must not exceed 15 hours during any semester in which graduate credit is pursued.
6. Permission for Vanderbilt undergraduates to enroll in post-baccalaureate courses does not constitute a commitment on the part of any department to accept the student in the future. Courses taken under this option are subject to departmental approval before they may be included on post-baccalaureate programs of study.
7. An undergraduate student exercising this option will be treated as a post-baccalaureate student with regard to class requirements and grading standards.

Interested students should consult the Office of Undergraduate Academic Affairs to verify their eligibility as defined above before attempting to register for post-baccalaureate course work under this option.

Transfer Credit/Summer Courses Off Campus

Students who transfer from another institution must have a final transcript sent directly to the Undergraduate Admissions Office, Vanderbilt University. Upon acceptance, students will be asked to submit course descriptions and syllabi for all proposed transfer credit. The Peabody Office of Undergraduate Academic Affairs, in consultation with other appropriate academic units, will evaluate the course work to determine which credits will transfer and which requirements (e.g., Liberal Education Core, professional core) are met by the transfer courses. No course for which a student received the grade *D+* or lower will transfer. Course work transferred to Vanderbilt from another institution will not carry with it a grade point average.

Transfer students must complete at least 60 hours of work at Vanderbilt. Two of the four semesters in residence must be the last two semesters of the student's degree program.

Peabody students who wish to take course work during the summer at another college and transfer the work to Vanderbilt must be in good standing with at least a C average. Prior approval from the Office of Undergraduate Academic Affairs must be granted for all courses to be taken elsewhere. Non-education students will not be permitted to take courses elsewhere to meet the basic 40-hour Liberal Education Core requirements. Course work transferred to Vanderbilt from another institution will not carry with it a grade point average.

Students who wish to participate in a non-Vanderbilt program in the United States, abroad, or at sea should apply for a leave of absence for the relevant semester. To qualify for such a leave, a student must be in good standing with at least a 2.700 grade point average as of the date of application. Students must obtain prior approval for the leave of absence and for the credits to be taken in the other program if the credits are to be transferred to Vanderbilt. Petitions for leaves of this type must be filed at least one month before the close of the preceding semester. The credit hours earned in other programs cannot be used by non-education students to satisfy Liberal Education Core requirements. Final approval of leaves of absence always rests with the Dean's office.

Credit for Officer Education Courses

Peabody College awards elective credit for Naval Science 231 and 241 and for Military Science 151–152 and 113.

Declaration of Major

Peabody students declare a major as part of the application process prior to admission. Changes in the major (if within Peabody) may be made after the first semester. Second majors must be declared no later than the second semester of the sophomore year. Also during the sophomore year, students majoring in Special Education and Human and Organizational Development will be required to declare their area of specialization or track.

Progress toward the Degree

At the beginning of each registration period, Peabody students and their faculty advisers receive a computerized audit showing progress toward the fulfillment of Liberal Education Core and major requirements.

Grading System

Peabody College undergraduate students are on a four-point grading system. All work is graded by letters, interpreted as follows:

- A: excellent
- B: good
- C: satisfactory
- D: minimum pass work
- F: failure

Under certain circumstances the following grades may be awarded:

- W: withdrawal
- P: pass (see Pass/D/Fail course provision)
- M: missed final examination
- I: incomplete in some requirement other than final examination
- MI: missed final examination with additional incomplete requirements

Plus and minus modifiers may be associated with the letters *A* through *D* as shown in the table below. Grade point averages are calculated using indicated grade point values.

Defined Grades with Corresponding Grade Points per Credit Hour

A	= 4.0	C	= 2.0
A-	= 3.7	C-	= 1.7
B+	= 3.3	D+	= 1.3
B	= 3.0	D	= 1.0
B-	= 2.7	D-	= 0.7
C+	= 2.3	F	= 0.0

Grade Point Average

A student's grade point average is obtained by dividing the grade points earned by the hours for which the student has registered, excluding courses taken for no credit, those from which the student has withdrawn, and those that are completed with the grade *P*.

Pass/ Fail and Pass/ No Credit Provisions

Students may elect to take some courses in which they can receive the grade *P* (Pass). This grade is entered for the student enrolled under the P/F option who is awarded a grade of *D-* or higher. The grade *P* is neither counted in the grade point average nor used in the determination of honors. A failing grade will appear on the student record as *F* and will be counted in the student's grade point average.

To be eligible for the P/F option, the student must have completed two regular semesters at Vanderbilt and must not be on academic probation. No more than one course per semester may be taken on a P/F basis and no more than three total during the undergraduate career. No more than one course from any Liberal Education Core area (e.g., communications, humanities) may be taken under this option.

The P/F option does not apply to courses in the following categories:

1. A Liberal Education Core course specifically designated for the major (e.g., Econ 100 for human and organizational development majors, or American history for education majors);
2. For students with a single or double major, courses in the department(s) of the major(s) or other courses that may be counted for the major(s);
3. For students with an interdisciplinary major, courses listed in the student's plan of study;
4. For students planning an optional minor, courses in the department of the minor or those counting toward an interdisciplinary minor;
5. A course from a required professional core.

Students taking a course on a P/F basis must be enrolled for at least 12 hours on a regularly graded basis. If a student drops a course and falls below 12 graded hours, the P/F course is converted automatically to a regularly graded basis.

Seniors who meet the above criteria and have permission to take fewer than 12 hours on a graded basis may take one course on a P/F basis in one of their last two semesters (e.g., a semester in which an internship or student teaching is not being taken). If the student does not graduate at the end of the senior year, the grade of *P* is automatically converted to the grade actually earned.

All P/F students are expected to meet normal course requirements (e.g., reports, papers, examinations, laboratory attendance) and are graded in a normal way. At the end of the semester, students enrolled on a P/F basis are awarded a regular grade. Any grade of *D-* or better is converted in the Student Records System to a *P*, while an *F* grade remains as awarded. A student taking a course on a P/F basis must meet the course prerequisites as set forth in this catalog.

Students register for a course on a P/F basis through OASIS within the change period of the registration period during the first week of classes. After this, students may change from a P/F basis to a regularly graded basis—but *not* from a regularly graded basis to a P/F basis—until the end of the eighth week of classes. These deadlines are published in the calendar. When a student wishes to complete a major or minor in a field in which a grade of *P* has been received, the registrar converts this grade to the regular grade originally earned.

Departments may designate that certain courses or competencies be reported on a Pass/No Credit basis. Hours passed in this status will count as hours earned but will not be included in the calculation of the student's grade point average. Grades of *No Credit* earn no hours of credit toward graduation and are not calculated in the grade point average.

Missed Final Examination

The grade *M* (missed) will be given to a student who missed the final examination who is not known to have defaulted, but the grade *F* will be given to a student who could not have passed the course even with the final

examination. The grade *M* must be authorized by the Dean, and it is the student's responsibility to obtain this authorization from the Peabody Office of Undergraduate Academic Affairs before the end of the examination period. The appropriate form requesting the grade *M* is available in the Peabody Registrar's Office. The grade for a student who misses a final examination and whose work is incomplete in other respects as well will be recorded as *MI*. The temporary grade *M* or *MI* is calculated as an *F* in the grade point average until it is replaced with the actual grade earned.

A student who secures authorization for an absence at the proper time is obliged to take a make-up examination during the first full week of the next semester, provided the student is in residence. It is the student's responsibility to contact the office of the Dean before the second day of classes to schedule the make-up.

Incomplete

The grade *I* (incomplete) is used in cases in which the student is not able to complete all course work in the normal time. The awarding of the grade *I* is the prerogative of the instructor and is used when illness or other extenuating circumstances prevent the completion of the work. The student must request an extension for incomplete work, and this request must be approved by the Dean before the date final grades are due. The appropriate form with which to secure approval for the grade *I* is available in the Peabody Registrar's Office. The instructor will specify a date by which remaining work must be completed and if the work is not completed by this date, the *I* grade will be changed to the grade the student would have received without the missing work. The temporary grade *I* is calculated as an *F* in the grade point average until it is replaced with the permanent grade.

Withdrawal

The symbol *W* (withdrawal) is assigned in lieu of a grade when a student formally withdraws from a class before the published mid-semester deadline. After that point, withdrawal will result in an *F*. A student who withdraws from school for reasons such as illness, unusual personal or family problems, and the like, may petition the Dean's office for an authorized administrative withdrawal. If approved, the student will receive the grade *W* for courses in progress. A student who withdraws from school without an authorized administrative withdrawal receives the grade *W* or *F* depending upon the date of withdrawal. The grade *W* is not included in the calculation of the grade point average.

Dead Week

Because Peabody classes integrate theory and practice, many courses include significant semester-long group and individual projects that culmi-

nate in papers, presentations, simulations, or other activities at the end of the semester. Therefore, while instructors are discouraged from scheduling quizzes, tests, or short-term assignments for the last week of the semester, Peabody does not have a “dead week” policy prohibiting assignments during the week before finals.

Repeat Courses

If a course is repeated, only the last grade and credit hours earned will be used to calculate the grade point average and be creditable toward graduation. However, the original grade will appear on the transcript. This policy also applies to Advanced Placement credit.

Duplication of Course Content

It is the responsibility of the individual student to avoid duplication in whole or in part of the content of any courses offered toward the degree. Such duplication may result in the withdrawal of credit. This policy also applies to Advanced Placement credit.

Class Standing

To qualify for sophomore standing, a freshman must earn at least 24 hours with a grade point average of at least 1.800. A freshman who fails to achieve sophomore standing at the end of two regular semesters is placed on probation and has one additional semester in which to qualify for sophomore standing. This additional semester must be the summer session at Vanderbilt. Normally, students who fail to qualify for sophomore standing in the third semester are dropped from the University.

A student qualifies for junior standing by earning 54 hours with a grade point average of at least 1.900. Students who fail to qualify for junior standing at the end of two semesters after qualifying for sophomore standing are placed on probation and must qualify in an additional semester. This third semester must be the summer session at Vanderbilt. Normally, students who do not qualify for junior standing in this additional semester will be dropped from the University.

A student qualifies for senior standing by earning 84 hours with a grade point average of at least 2.000. A student who fails to qualify for senior standing within two semesters of qualifying for junior standing will be placed on probation and must qualify in one additional semester. This additional semester must be the summer session at Vanderbilt. Normally, students who do not qualify for senior standing in this additional semester will be dropped from the University.

Alternate Track

Occasionally students find that it will be necessary to reduce their normal load due to medical reasons, varsity athletics, or other circumstances. The result is that they will accomplish the bachelor of science degree in nine or ten semesters instead of eight. In such cases, the student may request Alternate Track status. After discussing this option with their parents and faculty adviser, students petition the Dean for permission. This normally takes place during the sophomore year. Additional information is available in the Office of Undergraduate Academic Affairs.

Progress Evaluation

Students enrolled in Peabody College are expected to satisfy most Liberal Education Core requirements during the freshman and sophomore years. Although legitimate circumstances sometimes force the postponement of Liberal Education Core requirements, upper-level students are not expected to have a significant number of Liberal Education Core requirements outstanding. A student who, in the opinion of the faculty adviser, the department chair, or the Dean, is not making satisfactory progress toward meeting Liberal Education Core or other degree requirements may be reported to the Undergraduate Administrative Committee and is subject to being placed on academic probation by that committee. Students placed on academic probation for failure to make satisfactory progress toward a degree must remove the deficiency in the manner specified by the Administrative Committee.

Academic Probation and Dismissal

After achieving sophomore standing the student may not be on academic probation for more than two semesters. A student whose academic record warrants a third semester of probation normally will be dropped from the University.

Students will be placed on academic probation if any of the following conditions apply:

Freshmen

1. The student's grade point average falls below 1.800. Probation is removed (assuming there is no other reason for the probation) when the student's grade point average is raised to 1.800 or above.
2. The student fails to earn at least 12 hours in the first regular semester as a freshman. Probation is removed when the student achieves sophomore standing.
3. The student fails to achieve sophomore standing in the required two semesters. Probation is removed when the student achieves sophomore standing.

Sophomores

1. The student's grade point average falls below 1.800. Probation is removed (assuming there is no other reason for the probation) when the student's grade point average is raised to 1.800 or above, except that at the end of the second regular semester the student must qualify for junior standing.

2. The student fails to earn at least 12 hours in the first regular semester as a sophomore. Probation is removed when the student achieves junior standing.

3. The student is placed on probation by the Undergraduate Administrative Committee for failure to make satisfactory progress toward the degree. Probation is removed when the specified conditions are met.

4. The student fails to achieve junior standing in the required two semesters. Probation is removed when junior standing is achieved.

Juniors

1. The student's grade point average falls below 1.900. Probation is removed (assuming there is no other reason for the probation) when the grade point average is raised to 1.900 or above, except that at the end of the second regular semester the student must qualify for senior standing.

2. The student fails to earn at least 12 hours in the first regular semester as a junior. Probation is removed when the student achieves senior standing.

3. The student is placed on probation by the Undergraduate Administrative Committee for failure to make satisfactory progress toward the degree. Probation is removed when the specified conditions are met.

4. The student fails to achieve senior standing in the required two semesters. Probation is removed when senior standing is achieved.

Seniors

1. The student's grade point average falls below 2.000. Probation is removed when the grade point average is raised to 2.000 or above.

2. The student fails to earn at least 12 hours in the first regular semester as a senior. Probation is removed when the student graduates.

Under certain circumstances, a student who has been formally dismissed may be readmitted to Peabody. The Peabody Undergraduate Administrative Committee must review and approve any request for readmission.

Auditing

Peabody Courses. Any regularly enrolled Peabody student who wishes to audit a course at Peabody must obtain the oral approval of the instructor to attend the class but need not register for the course. To receive a transcript record of the audit, the student must register for the course (in audit status) and pay a \$10 audit fee.

Courses in Another School. A Peabody student who audits a course in another school of the University must register for audit status during regis-

tration. The audit will be indicated on the student's record, although not as a grade, and will be considered, and paid for, as part of the regular load.

Transient Students and Students from Other Schools. Transient students and students from other schools or divisions in the University must register for audit status during registration. The audit will be indicated on the student's record, although not as a grade, and will be considered, and paid for, as part of the regular load.

Student Leave of Absence

A student desiring a leave of absence should obtain the appropriate forms from the Office of Undergraduate Academic Affairs. All students are eligible, provided they have not been dropped by the University and are not dropped at the end of the semester during which application is made.

Leaves are granted for one or two semesters. Applications should be completed before the end of the fall semester for a leave of absence during the spring semester and before 15 August for a leave of absence during the fall semester (or for the academic year). If the leave is approved, the student must keep the Dean's office informed of any change of address while on leave.

Should a student seek to transfer to Vanderbilt credit earned elsewhere while on a leave of absence, it is mandatory that permission be obtained in advance from the Dean's office. Petitions for leaves of this type must be filed at least one month before the close of the preceding semester.

While the student is on leave, registration materials will be mailed to his or her permanent address. A student failing to register at the conclusion of the stated leave will be withdrawn from the University and must apply for readmission.

Students who wish to participate in a non-Vanderbilt program in the United States, abroad, or at sea should apply for a leave of absence for the relevant semester. To qualify for such a leave, a student must be in good standing at Vanderbilt with at least a 2.700 grade point average as of the date of application. Students must obtain prior approval for the leave of absence and for the credits to be taken in other programs if the credits are to be transferred to Vanderbilt. Final approval of leaves of absence always rests with the Dean's office. See the section on Transfer Credit in this chapter.

Graduation

Degree candidates must have completed satisfactorily all curriculum requirements, have passed all prescribed examinations, and be free of indebtedness to the University. Graduation requirements vary with the student's program of study but include a minimum of 120 hours (at least 60 of which must have been earned at Vanderbilt) and a minimum grade point average of 2.000.

Commencement. The University holds its annual Commencement ceremony following the spring semester. A student completing degree

requirements will be officially graduated, however, at the close of the semester or summer session in which the degree is earned, with such graduation recorded on the student's permanent record. Students who graduate at the close of the summer session or the fall semester preceding the spring commencement ceremony are encouraged to join spring graduates in the graduation ceremony in May. Those unable to do so may receive their diplomas by mail.

Special Programs

1

Overseas Programs

Junior Year Abroad

Qualified Peabody students, other than those majoring in Elementary or Special Education, have the opportunity to apply to spend their junior year at Homerton College of Cambridge University, Cambridge, England. The Peabody/Homerton program is for the entire academic year, with students enrolling in a full program of courses. Credit is usually applied to the student's major and/or related fields, as well as the Liberal Education Core.

More information about the requirements for Peabody's junior year abroad program is available through the Office of Undergraduate Student Affairs.

Internships and Teacher Placement in Cambridge

Students majoring in human and organizational development are required to complete a semester-long internship that incorporates practicum experience with the completion of a specific project that enhances the effectiveness of the organization. The internship provides an opportunity for students to integrate the theories and concepts learned in prior courses with experience in an organizational setting. Students can apply for internships in Cambridge, England, in addition to Nashville, Atlanta, New York, San Francisco, and Washington, D.C.

Students who major in early childhood or elementary education are required to complete a semester-long teacher placement. Students may apply to fulfill part of this requirement in Cambridge, England, during the summer before their senior year.

Information about the human and organizational development internship in Cambridge is available from Professor Dwight Giles, director of internships for the program in human and organizational development. Information about teacher placement in Cambridge is available from the Department of Teaching and Learning.

Post-Baccalaureate Programs

Five-Year Human and Organizational Development and Human Development Counseling Program

The combined five-year program in Human and Organizational Development and Human Development Counseling is designed to blend the undergraduate program with the master's level counselor preparation program. Students who successfully complete this combined program will earn their undergraduate B.S. degree and also be professionally trained as human development counselors (with an M.Ed. degree) by the end of their fifth year at Peabody. See the chapter on Post-Baccalaureate Programs for further details.

Joint Programs with Vanderbilt University School of Nursing

Students at Peabody College may complete a B.S. degree with a major in Human and Organizational Development and also earn a Master of Science in Nursing (M.S.N.) through a senior-in-absentia program in the School of Nursing. Students must complete the first three and a half years of study as a Peabody undergraduate student. During this time students pursue the major and the core courses in the health and human services track. Application for admission to the School of Nursing is completed during the summer after the student's sophomore year. Admitted students begin taking professional nursing courses in the fall of their senior year. Students must have successfully completed a minimum of 105 hours of undergraduate course work before officially being enrolled as a student in the School of Nursing. Upon successful completion of a minimum of 15 hours of nursing course work during the spring semester of the senior year, students are awarded the B.S. degree. Students continue full time in the professional program in the School of Nursing for the next summer, fall, spring, and summer sessions to earn the M.S.N. degree. Students conferred with the M.S.N. degree are qualified for all professional nursing careers and are eligible to apply to the National Council on Licensure Examination to become a Registered Nurse.

Students may also complete a bridge program offered by the School of Nursing. Students who choose this pre-nursing program complete 72 hours of suggested course work in Peabody College, apply for admission to the School of Nursing, obtain admission, forgo the B.S. degree, and complete the remaining course requirements for the M.S.N. degree. Students interested in this program of study should consult the School of Nursing catalog for a more complete program description.

Sample curricula for both the five-year and pre-nursing bridge programs are given below.

*Sample Curriculum Plan**Human and Organizational Development Major/ Nursing*

		Semester hours	
		FALL	SPRING
FRESHMAN YEAR			
HOD 1000	Applied Human Development	3	-
HOD 1001	Intrapersonal Development	1	-
HOD 1020	Community Service	1	-
HOD 1024	Interpersonal Development	-	1
HOD 1100	Small Group Behavior	-	3
Math	Mathematics Course	3	-
	Statistics Course	-	3
Phil 100 or 105	Philosophy Course	-	3
	Liberal Education Core	7	7
		15	17
SOPHOMORE YEAR			
HOD 1022	Presentation Skills	-	1
HOD 1200	Understanding Organizations	3	-
HOD 1400	Developing Human and Organizational Talents I	-	2
HOD 1700	Systematic Inquiry I	-	3
HOD 2260	Economics	3	-
or Econ 100			
HOD 2500	Health and Human Service Professions	3	-
Psci 100	Introduction to American Government and Politics	3	-
N150	Microbiology	-	4
	Liberal Education Core	3	6
		15	16
JUNIOR YEAR*			
HOD 2100	Public Policy	3	-
HOD 2505	Counseling Theories and Techniques	-	3
HOD 2510	Health Services to Diverse Populations	-	3
N160a, 160b	Human Anatomy and Physiology	4	4
N231	Introduction to Nutritional Health	2	-
	Liberal Education Core	6	6
		15	16

* Students apply for admission to the School of Nursing during their junior year.

		Fall	Spring	May/ Summer
SENIOR YEAR				
N215	Foundations of Professional Nursing I	2	-	-
N225	Population Based Health Care	3	-	-
N235	Human Experience of Health & Illness I	5	-	-
N245	Foundations for Clinical Practice*	5	-	-
N216	Professional Nursing Seminar	-	1	-
N226	Health Care System I	-	4	-
N236	Human Experience of Health & Illness I	-	5	-
N246	Integration of Theoretical & Clinical Aspects of Nursing I*	-	4	-
N217	Foundations of Professional Nursing II	-	-	3
N227	Health Care Systems II	-	-	3
N237	Human Experience of Health & Illness II	-	-	3
N247	Integration of Theoretical & Clinical Aspects of Nursing II*	-	-	4
		15	14	13

* Acceptable as undergraduate Human and Organizational Development practicum/internship requirement.

B.S. in Human and Organizational Development conferred at the end of the spring semester.

FIFTH YEAR

N308	Models/Theories in Nursing	3	–	–
N375	Research Methods	3	–	–
N376	Inquiry in Nursing	–	3	–
	Specialty Nursing Courses	7	7	7
	Electives	–	3	6
		13	13	13

Prenursing students may also elect to complete 72 hours of prerequisite courses and apply for admission to the School of Nursing for either their junior or senior year. Completion of this program culminates in the M.S.N. degree; no baccalaureate degree is awarded. With the M.S.N. degree, however, a student is qualified for all professional nursing careers and eligible to apply to the National Council on Licensure Examination to become a Registered Nurse.

A sample curriculum plan is outlined below for students who enter the School of Nursing in the fall of their junior year. At this time, all students must enter in the fall semester; spring entry is not offered. Students may apply for admission to the School of Nursing during the spring semester of their sophomore year. Refer to the *Medical Center Catalog* for requirements for the completion of the M.S.N.

*Sample Curriculum Plan
Entry in Fall of Junior Year*

FRESHMAN YEAR		FALL	Semester hours SPRING SUMMER	
HOD 1000	Applied Human Development	3	–	–
HOD 1001	Intrapersonal Development	1	–	–
HOD 1020	Community Service	1	–	–
HOD 1100	Small Group Behavior	–	3	–
HOD 1024	Interpersonal Development	–	1	–
Math 127a, 127b	Probability and Statistical Inference	3	3	–
Chem 101a, 101b	Introductory Chemistry	4	4	–
Phil 100	Introduction to Philosophy	–	3	–
<i>or</i>		–	3	–
Phil 105	Introduction to Ethics	3	–	–
Psychology 101	General Psychology	–	3	–
	English	–	3	–
	Humanities	–	–	3
		15	17	3
SOPHOMORE YEAR				
HOD 1022	Presentation Skills	–	1	–
HOD 1200	Understanding Organizations	3	–	–
HOD 1400	Career Development I	–	2	–
HOD 1700	Systematic Inquiry I	–	3	–
HOD 2260	Economics of Human Resources	3	–	–
<i>or</i>		3	–	–
Econ 100	Introductory Economics	4	4	–
Bsci 110a, 110b	Introduction to Biological Sciences	6	6	5
	Humanities <i>or</i> Social Science	–	–	5
		16	16	5
			Total	72

Interdisciplinary Majors

PEABODY College, in conjunction with the College of Arts and Science, offers five interdisciplinary majors. These majors are constructed around academic disciplines particularly appropriate for future teachers (except secondary), but are not limited to students entering teacher education. The interdisciplinary major consists of 36 hours of study and draws upon the academic resources of a number of departments throughout the University.

Program requirements are listed below.

Child Studies

Peabody has long had great strength in the area of Child Studies. The 36-hour interdisciplinary major in Child Studies draws on courses from Psychology, Education, Special Education, and Human and Organizational Development. The major is excellent pre-professional preparation for students interested in graduate school in Psychology or Education, in law (e.g., child and family advocacy), or in various health related areas (e.g., medicine, nursing) involving children. It is also appropriate for students who are interested in gaining a broader understanding of children and families in contemporary society. The major areas covered are: Developmental Psychology, Learning, Research Methods, Language and Literacy, and Families, Community and Diversity. Interested students should discuss the program with Howard Sandler, Professor of Psychology.

Liberal Education Core Requirements. 40 hours.

COMMUNICATIONS. *6 hours.* Two writing-intensive (W) courses are required in the Liberal Education Core. Both W courses may be taken as part of the Communications area, or one W course may be taken as part of the Communications area and the other as part of the Humanities area.

English 100W, 104W, 105W, 106W, 109W, 112W, 120W

Communication Studies (All regular* courses)

Humanities 105W, 106W, 107W, 108W

HUMANITIES. *9 hours* from at least two fields. One writing-intensive (W) course is required in this area if the writing-intensive requirement of six hours has not been met in the Communications area; one course in Philosophy is required; Philosophy 105 strongly recommended. Survey Courses

Classics 130, 146, 150, 160, 175, 211, 220

Computer Science 151

Film Studies (All regular* courses)

Fine Arts (All regular* courses except studio courses)

Foreign Language (All regular* courses at or above 101b or 102); Chinese or Japanese 202-216

Humanities 105W, 106W, 107W, 108W, 140, 141, 150, 151, 156, 175, 224, 265

Theatre 100, 201, 202, 203, 204, 232, 271

Literature

English 104W, 105W, 106W, 109W, 112W, 118W (if not used in Communications area)

English 208a and above

Chinese or Japanese 241 and above

French 220 and above

German 221 and above

Greek 201 and above

Humanities 140, 141, 150, 151, 156, 224, 265

Latin 201 and above

Portuguese 205 and above (except 207, 223)

Russian 221 and above (except 257-258)

Spanish 203, 221, and above

Music (All regular* courses offered through Blair School of Music, *including* MUSO 103, but *excluding* studio and other MUSO courses)

Philosophy (All regular* courses; 105 is strongly recommended)

Religious Studies (All regular* courses)

Women's Studies 150, 220, 230, 255

MATH. *6 hours.* Psychology 2101 is required; Psychology 2102 is required for Child Development majors and strongly recommended if Child Development is a second major.

Psychology 2101 (required)

Math 133, 140, 150a, 150b, 155a, 155b, 165, 180

Computer Science 212

NATURAL SCIENCES. *7 hours.* At least one Biology course is required; at least one lab course is required; no duplication of content.

Astronomy 101, 102, 130, 175

Biological Sciences 110a-110b

Biology 100, 105, 119, 129, 200-level courses

Chemistry 101a-101b, 102a-102b, 103a-103b, 104a-104b

Geology 100, 101, 102, 103, 104, 106, 150, 225

Nursing 150, 210a, 210b

Physics 101, 108, 110a-110b, 111a-111b, 117a-117b, 121a-121b

SOCIAL SCIENCES. *9 hours* from at least two fields. One course in Cultural Studies is required.

Anthropology (All regular* courses)

Cultural Studies (One course from this area is required.)

African American Studies 101, 263, 294a, 294b; American Studies 100; Anthropology 130, 210, 214, 231, 237, 241, 247; East Asian Studies 240; English 263, 271; European Studies 201; Fine Arts 200, 214, 252, 253, 254; History 155, 157, 239, 247-250, 253, 254, 264, 278, 280; HOD 2240; Music Literature 160, 170, 171; Political Science 214, 216, 219; Religious Studies 112, 113, 114, 130, 132, 133; Sociology 255; Women's Studies (All regular* courses except 150, 205, 220, 230, 252, 255)

Economics 100, 101

History (All regular* courses except 131)

Linguistics (All regular* courses)

Music Literature 147, 160, 170, 171

Political Science (All regular* courses)

Psychology (All regular* Peabody and Arts and Science courses except 209, 222, 225, 231, 242); 1500, 1600, 1700, 2000 recommended

Sociology (All regular* courses; 255 recommended)

Women's Studies (All regular* courses except 150, 220, 230, 252, 255)

*Special topics courses are not ordinarily acceptable to meet Liberal Education Core requirements. If a student wishes to consider using a special topic course, he or she must obtain prior approval. Independent study cannot be used to meet Liberal Education Core requirements.

Child Studies Major Courses

Development Courses [9 hrs]

Psychology1630. Developmental Psychology
Psychology1500. Cognitive Aspects of Human Development
Psychology1750. Social and Personality Development
Psychology2250. Infancy
Psychology2320. Adolescent Development

Learning [3 hrs]

English Education 2000. Exploring Literature for Children
Mathematics Education 2100 or 2200
Science Education 2200 or Social Studies Education 2100
Psychology 1300. Cognition and Instruction
Psychology 2310. Educational Psychology
Special Education 2110. Managing Academic and Social Behavior
Special Education 2420. Assessment Procedures for Young Children

Research Methods [3hrs]

Psychology 2510. Experimental Methods
Psychology 2520. Observational Methods
Psychology 2530. Psychometric Methods
HOD1700. Systematic Inquiry

Families, Community, and Diversity [6 hrs]

Special Education 1010. Introduction to Exceptionality
Education 1020. Society School and the Teacher
Education 2120. Parents and their Developing Children
Special Education 2020. Family Intervention
Education 2920. Social and Philosophical Aspects of Education
HOD 2510. Health Service Delivery to Diverse Populations
HOD 2600. Social Problems I
Psychology 2470. Introduction to Community Psychology

Language and Literacy [6 hrs]

Special Education 2030. Introduction to Language and Communication
Education 2430. Addressing Problems in Literacy Learning
Psychology 2000. Language and Representational Systems

Electives in Child Studies [9 hrs]

All courses listed above and
Psychology 2102. Statistical Analysis
Psychology 2810. Practicum: Child Development

Language and Literacy Studies

COMMUNICATIONS.

Communication Studies 100, Fundamentals of Public Speaking; 101, Interpersonal Communication; 230, Theory of Communication

ENGLISH.

(A total of 3 hours from 104W, 105W, 106W)

English 112W, Introduction to Poetry, or 120W, Intermediate Composition; ENED 2910, Exploring Literature with Children plus a 200-level English course

LINGUISTICS.

Ling 200, Introduction to Language; 202, Sociolinguistics or 203, Anthropological Linguistics, or PSY 2000, Language and Representational Systems; ENED 2280, Language Study in the Elementary and Secondary Classroom

ELECTIVES.

Select two from the following: Communications Studies 220, Rhetoric of Mass Media; 221, Rhetoric of the American Experience; 223, Values in Modern Communication; Theater 100, Fundamentals of Theater; Psychology 242*, Psychology of Language; Philosophy 102, General Logic; Political Science 242**, Political Communication; English 240, The History of the English Language, or 241, Modern English Grammar; ENED 2920, Literature for Adolescents; Ling 262, Historical and Comparative Linguistics; 240, Morphology, or 241, Syntax

*Prerequisite: Psychology 101

**Prerequisite: Political Science 100, 101, or 102

Mathematics and Science Studies

PHYSICAL SCIENCE.

Take 8 hours from the following: Chemistry 101a-101b, Introductory Chemistry; Physics 110a-110b and 111a-111b, Introductory Physics and Laboratory

BIOLOGY.

100, General Biology, or 101, Fundamentals of Biology

GEOLOGY/ASTRONOMY.

Geology 100, Environmental Geology, or 101, Physical Geology, or 102, Historical Geology, or 103, Oceanography, or 104, Earth System Science, or 106, Marine and Coastal Environments; or Astronomy 101, Introductory Astronomy

HISTORY/PHILOSOPHY.

History 201, Science and Society before the Enlightenment, or 202, Science and Society after the Enlightenment, or 204, History of Medicine; or Astronomy 130, History of Astronomy; or Philosophy 244, Philosophy and the Natural Sciences; or SCED 2200, Science for Elementary Teachers

CALCULUS.

Mathematics 150a-150b, First-year Calculus, and 170a, Second-year Calculus; or 155a-155b, First-year Accelerated Calculus

One course from two of the following:

PROBABILITY AND STATISTICS.

Mathematics 180, Fundamentals of Probability and Statistics, or 214, Discrete Structures, or 215, Discrete Mathematics, or 218, Introduction to Mathematical Statistics, or Psychology 2101, Introduction to Statistical Analysis

GEOMETRY.

Mathematics 210, Axiomatic Geometry, or 240, Transformation Geometry

ALGEBRA.

Mathematics 194, Methods of Linear Algebra, or 223, Abstract Algebra, or 204, Linear Algebra

ELECTIVES.

3 additional hours from any 200-level course in Mathematics

Natural Science Studies

CHEMISTRY.

Chemistry 101a-101b, Introductory Chemistry; or 102a-102b, General Chemistry, and 104a-104b, General Chemistry Laboratory

PHYSICS.

Physics 110a-110b and 111a-111b, Introductory Physics and Laboratory; or 117a-117b, General Physics

BIOLOGY.

100, General Biology or 101, Fundamentals of Biology; and 119, Introduction to Zoology, or 129, Introduction to Botany

GEOLOGY/ASTRONOMY.

Geology 100, Environmental Geology, or 101, Physical Geology, or 102, Historical Geology, or 103, Oceanography, or 104, Earth System Science, or 106, Marine and Coastal Environments; or Astronomy 101, Introductory Astronomy

HISTORY/PHILOSOPHY.

History 201, Science and Society before the Enlightenment, or 202, Science and Society after the Enlightenment, or 204, History of Medicine; or Astronomy 130, History of Astronomy; or Philosophy 244, Philosophy and the Natural Sciences; or SCED 2200, Science for Elementary Teachers

ELECTIVES.

Additional hours in Chemistry, Physics, Biology, Geology, Astronomy, History or independent research for at least 6 hours

Social Studies

Students selecting an interdisciplinary major in social studies will have seven options available to them. Each option requires 18 hours of study focused on a single social science discipline that is supplemented with 18 hours of coursework drawn from studies within other social sciences. The seven options available to students include a focus on any of the following areas of study: Anthropology, Economics, American History, European History, American Politics, World Politics, or Sociology.

Anthropology

ANTHROPOLOGY.

101, Introduction to Anthropology; 103, Origins and Evolution of Human Culture; 104, The Rise and Fall of Civilization

A Comparative Anthropology and Anthropological Theory Course

An Archaeology and Physical Anthropology Course

A Ethnography, Ethnohistory, and Linguistics Course

Six courses drawn from at least three areas:

Economics 100, 101, 226

History 100 or 101, 170 or 171, 190, 200, 220, 222, 292

Political Science 100, 101, or 102; 204, 210, 217, 221, 244, 245

Sociology 101 or 102, 201, 230, 236, 244, 248, 249, 250, 254, 255

Economics

ECONOMICS.

100, Intro. Economics: Price System and Business Fluctuation; 101, Intro. Economics: Special Aspects of the Price System, 201, Statistics and three other courses from economics

Six courses drawn from at least three areas:

Anthropology 101, 102, 103, 104, 206, 207, 237

History 100 or 101, 170 or 171, 190, 200, 220, 222, 292

Political Science 100, 101, or 102; 204, 210, 217, 221, 244, 245

Sociology 101 or 102, 201, 230, 236, 244, 248, 249, 250, 254, 255

American History

HISTORY.

170, History of the U.S. to 1865; 171, History of the U.S. since 1865

Plus four courses on American History (267-292)

Six courses drawn from at least three areas:

Anthropology 101, 102, 103, 104, 206, 207, 237

Economics 100, 101, 226

Political Science 100, 101, or 102; 204, 210, 217, 221, 244, 245

Sociology 101 or 102, 201, 230, 236, 244, 248, 249, 250, 254, 255

European History

HISTORY.

100, History of Western Civilization to 1700; 101, History of Western Civilization since 1700

Plus four courses on European History (208-245)

Six courses drawn from at least three areas:

Anthropology 101, 102, 103, 104, 206, 207, 237

Economics 100, 101, 226

Political Science 100, 101, or 102; 204, 210, 217, 221, 244, 245

Sociology 101 or 102, 201, 230, 236, 244, 248, 249, 250, 254, 255

American Politics

POLITICAL SCIENCE.

100, Intro. To American Government and Politics

Any five of the following PSCI courses: 204, 222, 223, 240-262

Six courses drawn from at least three areas:

Anthropology 101, 102, 103, 104, 206, 207, 237

Economics 100, 101, 226

History 100 or 101, 170 or 171, 190, 200, 220, 222, 292

Sociology 101 or 102, 201, 230, 236, 244, 248, 249, 250, 254, 255

World Politics

POLITICAL SCIENCE.

101, Introduction To Comparative Politics or 102, Introduction to International Politics

Any five of the following PSCI courses: 210-228

Six courses drawn from at least three areas:

Anthropology 101, 102, 103, 104, 206, 207, 237

Economics 100, 101, 226

History 100 or 101, 170 or 171, 190, 200, 220, 222, 292

Sociology 101 or 102, 201, 230, 236, 244, 248, 249, 250, 254, 255

Sociology

SOCIOLOGY.

101 or 102, 201,

A Sociology Course drawn from the Core Area of Power and Inequality

A Sociology Course drawn from the Core Area of Dynamics of Social Change

A Sociology Course drawn from the Core Area of Individuals and Institutions

A Sociology Elective

Six courses drawn from at least three areas:

Anthropology 101, 102, 103, 104, 206, 207, 237

Economics 100, 101, 226

History 100 or 101, 170 or 171, 190, 200, 220, 222, 292

Political Science 100, 101, or 102; 204, 210, 217, 221, 244, 245



Major in Child Development

CHAIR Kathleen V. Hoover-Dempsey

DIRECTOR OF THE PROGRAM Kathleen V. Hoover-Dempsey

PROFESSORS Penelope H. Brooks, Judy Garber, John J. Rieser, Howard M. Sandler,
Tedra Ann Walden

ASSOCIATE PROFESSOR Kathleen V. Hoover-Dempsey

ASSISTANT PROFESSOR Ellen E. Pinderhughes

LECTURERS Steven A. McFadyen-Ketchum, Francis Joseph McLaughlin III

I THE child development major is designed for students who wish to study children (infancy through adolescence) and the major family, cultural, peer, school, and neighborhood contexts in which they live. The major is designed to provide a strong background in the social and behavioral sciences related to child development, a focused understanding of the scientific study of children and the contexts in which they develop, and opportunities for supervised and independent research on aspects of child development in ways that enable students to link theories and prior research to research design and data on children's development. The major is excellent preparation for graduate study in selected social science and professional fields (e.g., psychology, medicine, nursing, education, public policy) and offers an excellent complementary (or second) major for undergraduate students simultaneously pursuing a major in cognitive studies, education (early childhood or elementary), human and organizational development, or special education.

The child development curriculum is designed to ensure that students develop a background in the liberal arts and sciences; a clear understanding of the theories, major research findings, and research methods central to the field of child development; and an area of focus or expertise in child development. Development of background in the liberal arts and sciences occurs within the context of the Liberal Education Core, composed of required and elective courses in communications, humanities, mathematics, natural sciences, and social sciences. A clear understanding of theory and research central to the field is developed through the major core courses. These include an overview of child development, courses focused on the domains of psychological processes central to human development (cognition; social and personality development), courses related to the major epochs of child development (infancy and adolescence), and courses devoted to the major research methodologies in the field (experimental, observational, psychometric).

Honors Program

The Honors Program in Child Development offers qualified majors the

opportunity to conduct individual research projects in collaboration with faculty members. This research experience culminates in the writing and public presentation of a senior thesis. Students who major in Child Development are eligible to apply for the Honors Program at the end of their sophomore year if they have an overall grade point average of at least 3.000 and at least a 3.000 in Child Development courses. Students who complete the program successfully and who have a final grade point average of at least 3.000 will receive Honors in Child Development. The program should substantially aid those intending to do graduate work. More specific information concerning admission to and the requirements of the Honors Program is available from the Director of the Child Development Program.

Curriculum

Students take a minimum of 120 hours, distributed as follows. [See the Peabody Undergraduate *Student Handbook*, available from the Office of Undergraduate Academic Affairs, for slight variations in programs of study for students pursuing child development as a second major.]

Liberal Education Core Requirements. 40 hours.

COMMUNICATIONS. *6 hours.* Two writing-intensive (W) courses are required in the Liberal Education Core. Both W courses may be taken as part of the Communications area, or one W course may be taken as part of the Communications area and the other as part of the Humanities area.

English 100W, 104W, 105W, 106W, 109W, 112W, 120W

Communication Studies (All regular* courses)

Humanities 105W, 106W, 107W, 108W

HUMANITIES. *9 hours* from at least two fields. One writing-intensive (W) course is required in this area if the writing-intensive requirement of six hours has not been met in the Communications area; one course in Philosophy is required; Philosophy 105 strongly recommended. Survey Courses

Classics 130, 146, 150, 160, 175, 211, 220

Computer Science 151

Film Studies (All regular* courses)

Fine Arts (All regular* courses except studio courses)

Foreign Language (All regular* courses at or above 101b or 102); Chinese or Japanese 202-216

Humanities 105W, 106W, 107W, 108W, 140, 141, 150, 151, 156, 175, 224, 265

Theatre 100, 201, 202, 203, 204, 232, 271

Literature

English 104W, 105W, 106W, 109W, 112W, 118W (if not used in Communications area)

English 208a and above

Chinese or Japanese 241 and above

French 220 and above

German 221 and above

Greek 201 and above

Humanities 140, 141, 150, 151, 156, 224, 265

Latin 201 and above

- Portuguese 205 and above (except 207, 223)
 Russian 221 and above (except 257-258)
 Spanish 203, 221, and above
 Music (All regular* courses offered through Blair School of Music, *including* MUSO 103, but *excluding* studio and other MUSO courses)
 Philosophy (All regular* courses; 105 is strongly recommended)
 Religious Studies (All regular* courses)
 Women's Studies 150, 220, 230, 255
- MATH. *6 hours.* Psychology 2101 is required; Psychology 2102 is required for Child Development majors and strongly recommended if Child Development is a second major.
 Psychology 2101 (required)
 Math 133, 140, 150a, 150b, 155a, 155b, 165, 180
 Computer Science 212
- NATURAL SCIENCES. *7 hours.* At least one Biology course is required; at least one lab course is required; no duplication of content.
 Astronomy 101, 102, 130, 175
 Biological Sciences 110a-110b
 Biology 100, 105, 119, 129, 200-level courses
 Chemistry 101a-101b, 102a-102b, 103a-103b, 104a-104b
 Geology 100, 101, 102, 103, 104, 106, 150, 225
 Nursing 150, 210a, 210b
 Physics 101, 108, 110a-110b, 111a-111b, 117a-117b, 121a-121b
- SOCIAL SCIENCES. *9 hours* from at least two fields. One course in Cultural Studies is required.
 Anthropology (All regular* courses)
 Cultural Studies (One course from this area is required.)
 African American Studies 101, 263, 294a, 294b; American Studies 100; Anthropology 130, 210, 214, 231, 237, 241, 247; East Asian Studies 240; English 263, 271; European Studies 201; Fine Arts 200, 214, 252, 253, 254; History 155, 157, 239, 247-250, 253, 254, 264, 278, 280; HOD 2240 ; Music Literature 160, 170, 171; Political Science 214, 216, 219; Religious Studies 112, 113, 114, 130, 132, 133; Sociology 255; Women's Studies (All regular* courses except 150, 205, 220, 230, 252, 255)
 Economics 100, 101
 History (All regular* courses except 131)
 Linguistics (All regular* courses)
 Music Literature 147, 160, 170, 171
 Political Science (All regular* courses)
 Psychology (All regular* Peabody and Arts and Science courses except 209, 222, 225, 231, 242); 1500, 1600, 1700, 2000 recommended
 Sociology (All regular* courses; 255 recommended)
 Women's Studies (All regular* courses except 150, 220, 230, 252, 255)

*Special topics courses are not ordinarily acceptable to meet Liberal Education Core requirements. If a student wishes to consider using a special topic course, he or she must obtain prior approval. Independent study cannot be used to meet Liberal Education Core requirements.

Major Requirements. 30 hours.

Students take a minimum of 30 hours in Child Development. The core consists of six courses (18 hours) in developmental areas, epochs, and methods, and a minimum of four additional courses (12 hours) in an elective area of specialization. In addition, Psychology 2101 and Psychology 2102 are required.

Major Core. 21 hours.

- Psychology 1630. Developmental Psychology
- Psychology 1500. Cognitive Aspects of Human Development
- Psychology 1750. Social and Personality Development
- Psychology 2102. Statistical Analysis

One of the following two courses:

- Psychology 2250. Infancy
- Psychology 2320. Adolescent Development

Two of the following three courses:

- Psychology 2510. Experimental Methods
- Psychology 2520. Observational Methods
- Psychology 2530. Psychometric Methods

Major Elective Area. A minimum of 9 hours.

Suggested courses include the following. With the approval of the adviser and program director, other courses may also be used as part of the Child Development Elective Area.

- Education 2120. Parents and Their Developing Children
- Education 2130. Early Childhood Education: Programs, Curriculum, and Teaching
- Education 2140. Infants and Toddlers: Programs, Curriculum, and Teaching
- Linguistics 200. Introduction to Language
- Psychology 233. Introduction to the Nervous System
- Psychology 1600. Psychology of Thinking
- Psychology 1700. Social and Emotional Context of Cognition
- Psychology 2000. Language and Representational Systems
- Psychology 2230. Family, Career, and Gender: Developmental Perspectives
- Psychology 2250. Infancy
- Psychology 2310. Educational Psychology
- Psychology 2320. Adolescent Development
- Psychology 2510. Experimental Methods
- Psychology 2520. Observational Methods
- Psychology 2530. Psychometric Methods
- Psychology 2610. Ethical and Moral Development
- Psychology 2690. Special Topic Seminars (These vary from semester to semester; any Psychology 2690 appropriate for Child Development is acceptable.)
- Psychology 2691. Developmental Neuroscience
- Psychology 2692. Developmental Psychobiology
- Psychology 2810. Practicum: Child Development
- Psychology 2890. Ethical Issues in Human Services
- Psychology 2980. Readings and Research in Psychology for Undergraduates
- Special Education 2020. Family Interventions

- Special Education 2030. Introduction to Language and Communication
Special Education 2400. Early Education for Children with Disabilities
Special Education 2420. Developmental Assessment Strategies

Second Major or Electives. 50 hours (or less if additional hours are earned in the Liberal Education Core, Major Core, or Major Elective Area).

The Minor in Child Development

The minor in Child Development consists of 18 hours in the following courses:

- Psychology 1630. Developmental Psychology
Psychology 2101. Introduction to Statistical Analysis (may be taken as part of the Liberal Education Core)

One of the following:

- Psychology 1500. Cognitive Aspects of Human Development
Psychology 1750. Social & Personality Development

One of the following:

- Psychology 2250. Infancy
Psychology 2320. Adolescent Development

One of the following:

- Psychology 2510. Experimental methods
Psychology 2520. Observational methods
Psychology 2530. Psychometric methods

One Child Development elective course

(Any of the courses above not taken to meet a minor requirement or any Special Topic Seminar in Child Development.)

The Five-year Child Development/Nursing Program

The five-year Child Development/Nursing Program combines the undergraduate major degree in Child Development with the requirements of the Master of Science in Nursing program in the School of Nursing. The prerequisites for admission to the five-year Child Development/Nursing Program are completed within the first three years of the undergraduate program; these include all requirements of the Child Development major and all prerequisites for admission to the Master of Science in Nursing (MSN) program. Application to the MSN program in the School of Nursing is made at the end of the sophomore year, and admissions decisions are made during the student's junior year. If admitted to the program, the student takes all senior year courses in the School of Nursing. The Bachelor of Science degree in Child Development is awarded after the completion of the senior year (and a minimum of 120 credit hours). The student continues in the Nursing program during the summer immediately following graduation, and continues

through the fifth year as a student in the School of Nursing. The Master of Science in Nursing is awarded upon completion of all Nursing program requirements, usually at the end of the fifth year of study.

Sample Curriculum Plan: Child Development Major/ Nursing

		Semester Hours	
		Fall	Spring
FRESHMAN YEAR			
Psychology 1630	Developmental Psychology	3	-
Psychology 1500	Cognitive Aspects of Human Development	-	3
Psychology 1750	Social and Personality Development	-	3
	Liberal Education Core	12	9
		<u>15</u>	<u>15</u>
SOPHOMORE YEAR			
Psychology 2101	Statistics*	3	-
Psychology 2102	Statistics*	-	3
Nursing 150	Microbiology*	-	4
One of the following:		3	-
Psychology 2250	Infancy		
Psychology 2320	Adolescent Development		
One of the following:		-	3
Psychology 2510	Experimental Methods		
Psychology 2520	Observational Methods		
Psychology 2530	Psychometric Methods		
	Liberal Education Core	10	6
		<u>16</u>	<u>16</u>
<i>Application to the Nursing program: end of the sophomore year</i>			
JUNIOR YEAR			
Nursing 210a	Anatomy & Physiology I**	4	-
Nursing 210b	Anatomy & Physiology II**	-	4
Nursing 231	Nutrition	-	2
One of the following:		3	-
Psychology 2510	Experimental Methods		
Psychology 2520	Observational Methods		
Psychology 2690	Psychometric Methods		
	Child Development major elective area	6	6
	Liberal Education Core/Electives	3	3
		<u>16</u>	<u>15</u>

SENIOR YEAR***

(If not admitted to the Nursing program, the student will not take the courses below, but will take 'regular' senior year courses [e.g., electives])

Nursing 215	Foundations of Professional Nursing I	2	-
Nursing 225	Population-based Health Care	3	-
Nursing 235	Human Experience of Health and Illness	5	-
Nursing 245	Foundations for Clinical Practice	5	-
Nursing 216	Professional Nursing Seminar	1	-
Nursing 226	Health Care System I	-	4
Nursing 237	Human Experience of Health and Illness I	-	5

Nursing 246	Integration of Theoretical and Clinical Aspects of Nursing I	-	4
		<u>15</u>	<u>14</u>

B.S. degree conferred at the end of the spring semester of the senior year.

SUMMER AFTER THE B.S. DEGREE

		Summer
Nursing 217	Foundations of Professional Nursing II	3
Nursing 227	Health Care Systems II	3
Nursing 237	Human Experience of Health & Illness III	3
Nursing 247	Integration of Theoretical and Clinical Aspects of Nursing II	4
		<u>13</u>

FIFTH YEAR

		Fall	Spring	Summer
Nursing 308	Models and Theories in Nursing	3	-	-
Nursing 375	Research Methods	3	-	-
Nursing 376	Inquiry in Nursing	-	3	-
	Specialty nursing courses	7	7	7
	Electives	-	3	6
		<u>13</u>	<u>13</u>	<u>13</u>

*Meets Child Development major requirement and Liberal Education Core requirement.

**Meets Five-Year Nursing Program requirement and Liberal Education Core requirement.

***Undergraduate degree (B.S. in Child Development) is awarded at the end of the senior year.





Major in Cognitive Studies

CHAIR, DEPARTMENT OF PSYCHOLOGY AND HUMAN DEVELOPMENT Kathleen V. Hoover-Dempsey
DIRECTOR OF THE PROGRAM Craig A. Smith

PROFESSORS John D. Bransford, Penelope H. Brooks, Susan R. Goldman, James W. Pellegrino, John J. Rieser, Victoria J. Risko, Howard M. Sandler, Tedra Ann Walden
ASSOCIATE PROFESSORS Kathleen V. Hoover-Dempsey, Charles K. Kinzer, Laura R. Novick, Deborah W. Rowe, Daniel L. Schwartz, Robert D. Sherwood, Craig A. Smith

I THE Cognitive Studies major is designed for students who wish to become active inquirers into the processes by which people learn to think, solve problems, and reason. The major encourages the development of flexible reasoning and problem-solving skills that are useful in a wide variety of endeavors. The major is excellent preparation for graduate study in the social and behavioral sciences as well as for areas (such as medicine and law) that place importance on inquiry and clear thinking.

The curriculum is planned to ensure that students receive a strong background in both science and the liberal arts, with an emphasis on problem solving and complex decision-making. The courses in the core curriculum focus on various aspects of human cognition, including communication, cognitive development, basic cognitive processes, applications of theories of knowledge, and sociocultural aspects of learning. Students are encouraged to consult their advisers about pursuing a second major or developing an area of concentration that is consistent with their career plans. The major also emphasizes an appreciation of the scientific method and the research process; numerous opportunities exist to pursue independent study in close collaboration with faculty members.

Leadership and success in our society will depend increasingly on one's ability to process complex information, solve difficult problems using systematic analysis, and facilitate the learning of others. The knowledge and experience gained by students in cognitive studies will allow them to be full participants in the society of learners who represent the future.

Honors Program

The Honors Program in Cognitive Studies offers qualified majors the opportunity to conduct individual research projects in collaboration with faculty members. This research experience culminates in the writing and public presentation of a senior thesis. Students who major in Cognitive Studies are eligible to apply for the honors program at the end of their sophomore year if

they have an overall grade point average of at least 3.000 and a 3.000 in cognitive studies courses. Students who complete the program successfully and who have a final grade point average of at least 3.000 will receive Honors in Cognitive Studies. The program should substantially aid those intending to do graduate work. More specific information concerning admission to and the requirements of the honors program is available from the Director of the Cognitive Studies Program.

Curriculum

Students take a minimum of 120 hours, distributed as follows. [See explanatory material above and program of studies work sheets (available in the Office of Undergraduate Academic Affairs) for slight variations in programs of study for students pursuing Cognitive Studies as a second major.]

Liberal Education Core Requirements. 40 hours.

COMMUNICATIONS. *6 hours.* Two writing-intensive (W) courses are required in the Liberal Education Core. Both W courses may be taken as part of the Communications area, or one W course may be taken as part of the Communications area and the other as part of the Humanities area.

English 100W, 104W, 105W, 106W, 109W, 112W, 120W

Communication Studies (All regular* courses)

Humanities 105W, 106W, 107, 108W

HUMANITIES. *9 hours* from at least two fields. One writing-intensive (W) course is required in this area if the writing-intensive requirement of six hours has not been met in the Communications area.

Survey Courses

Classics 130, 146, 150, 160, 175, 211, 220

Humanities 105W, 106W, 107W, 108W, 140, 141, 150, 151, 156, 175, 224, 265

Computer Science 151

Film Studies (All regular* courses)

Fine Arts (All regular* courses except studio courses)

Foreign Language (All regular* courses at 101b or 102 level or above); Chinese or Japanese 202-216 and above

Literature

English 104W, 105W, 106W, 109W, 112W, 118W (if course is not already counted under Communications)

English 208a or above

Chinese or Japanese 241 or above

French 220 and above

German 221 and above (except 213, 214, 220)

Greek 201 and above

Humanities 140, 141, 150, 151, 156, 175, 224, 265

Latin 201 and above

Portuguese 205 and above (except 207, 223)

Russian 221 and above (except 257, 258)

Spanish 203, 221, and above

Music (All regular* courses offered by Blair School of Music, *including* MUSO 103, but *excluding* studio and other MUSO courses)

Philosophy (All regular* courses)

Religious Studies (All regular* courses)

Theatre 100, 201, 202, 203, 204, 232, 271

Women's Studies 150, 220, 230, 255

MATHEMATICS. 6 hours. Cognitive Studies majors must take Psychology 2101; Psychology 2102 is strongly recommended.

Mathematics 133, 140, 150a, 150b, 155a, 155b, 165, 180

Psychology 2101, 2102

Computer Science 212

NATURAL SCIENCE. 7 hours. At least one laboratory science course is required. Any course or combination of the following provided course content is not repeated. Check department listings for credit restrictions.

Astronomy 101, 102, 130, 175

Biological Sciences 110a, 110b

Biology 100, 105, 119, 129, 200-level courses

Chemistry 101a, 101b, 102a, 102b, 103a, 103b, 104a, 104b

Geology 100, 101, 102, 103, 104, 106, 150, 225

Nursing 150, 210a, 210b

Physics 101, 108, 110a and 111a, 110b and 111b, 117a, 117b, 121a, 121b

SOCIAL SCIENCES. 9 hours. Two of the fields listed below must be represented. One course in Cultural Studies is required.

Anthropology (All regular* courses)

Cultural Studies

African American Studies 101, 263, 294a, 294b; American Studies 100; Anthropology 130, 210, 214, 231, 237, 241, 247; East Asian Studies 240; English 263, 271; European Studies 201; Fine Arts 200, 214, 252, 253, 254; History 155, 157, 239, 247-250, 253, 254, 264, 278, 280; HOD 2240; Music Literature 160, 170, 171; Political Science 214, 216, 219; Religious Studies 112, 113, 114, 130; Sociology 255; Women's Studies (All regular* courses except 150, 220, 230, 252, 255) Economics 100, 101

History (All regular* courses except 131)

Linguistics (All regular* courses)

Music Literature 141, 160, 170, 171

Political Science (All regular* courses)

Psychology (All regular Peabody and Arts and Science courses except [A&S] 209, 222, 225, 231, 242; [Peabody] 1630, 2101, 2102, 2230, 2310, 2320, 2510, 2520, 2530, 2691, 2692)

Sociology (All regular* courses; 255 recommended)

Women's Studies (All regular courses except 150, 220, 252, 255)

Major Requirements. 28-29 hours.

Students take a minimum of 28 hours in Cognitive Studies. The core consists of four courses (13 hours) and a minimum five additional courses (15 hours) in the elective area. In addition, two courses (6 hours) are required in the Methods of Inquiry area.

Major Core. 13 hours.

Psychology 1200. Minds, Brains, Contexts, and Cultures

Psychology 1600. Psychology of Thinking

Psychology 2100. Advanced Topical Seminar

and

Psychology 2510. Experimental Methods

or

Psychology 208. Research Methods

Major Elective Area. 15–16 hours.

Psychology 1300. Cognition and Instruction

Psychology 1500. Cognitive Aspects of Human Development

Psychology 1700. Social and Emotional Context of Cognition

Psychology 1750. Social and Personality Development

Psychology 1800. Freshman Seminar in Cognitive Studies

Psychology 2000. Language and Representational Systems

Psychology 2100. Advanced Topical Seminar (May be repeated if no duplication of content)

Psychology 2980. Readings and Research for Undergraduates

Special Education.2030. Introduction to Language and Communication

Methods of Inquiry. 6 hours.

May be used to satisfy Liberal Education Core requirements

Anthropology 211 or 239

Chemistry 210

Computer Science 101 or 102; 150; 212

Economics 201

Geology 225

HOD 1700

Molecular Biology 250

Philosophy 102, 202, 244

Psychology 2102, 2520, 2530

Religious Studies 240

Sociology 211

Special Education 2110 (with 2111)

Second Major and Electives. 51–52 hours.

The Minor in Cognitive Studies

The minor in Cognitive Studies consists of 16 hours in the following courses:

REQUIRED COURSES. 7 hours.

Psychology 1200. Minds, Brains, Contexts, and Cultures

Psychology 1600. Psychology of Thinking

ELECTIVE COURSES. 9 hours.

Psychology 1300. Cognition and Instruction

Psychology 1500. Cognitive Aspects of Human Development

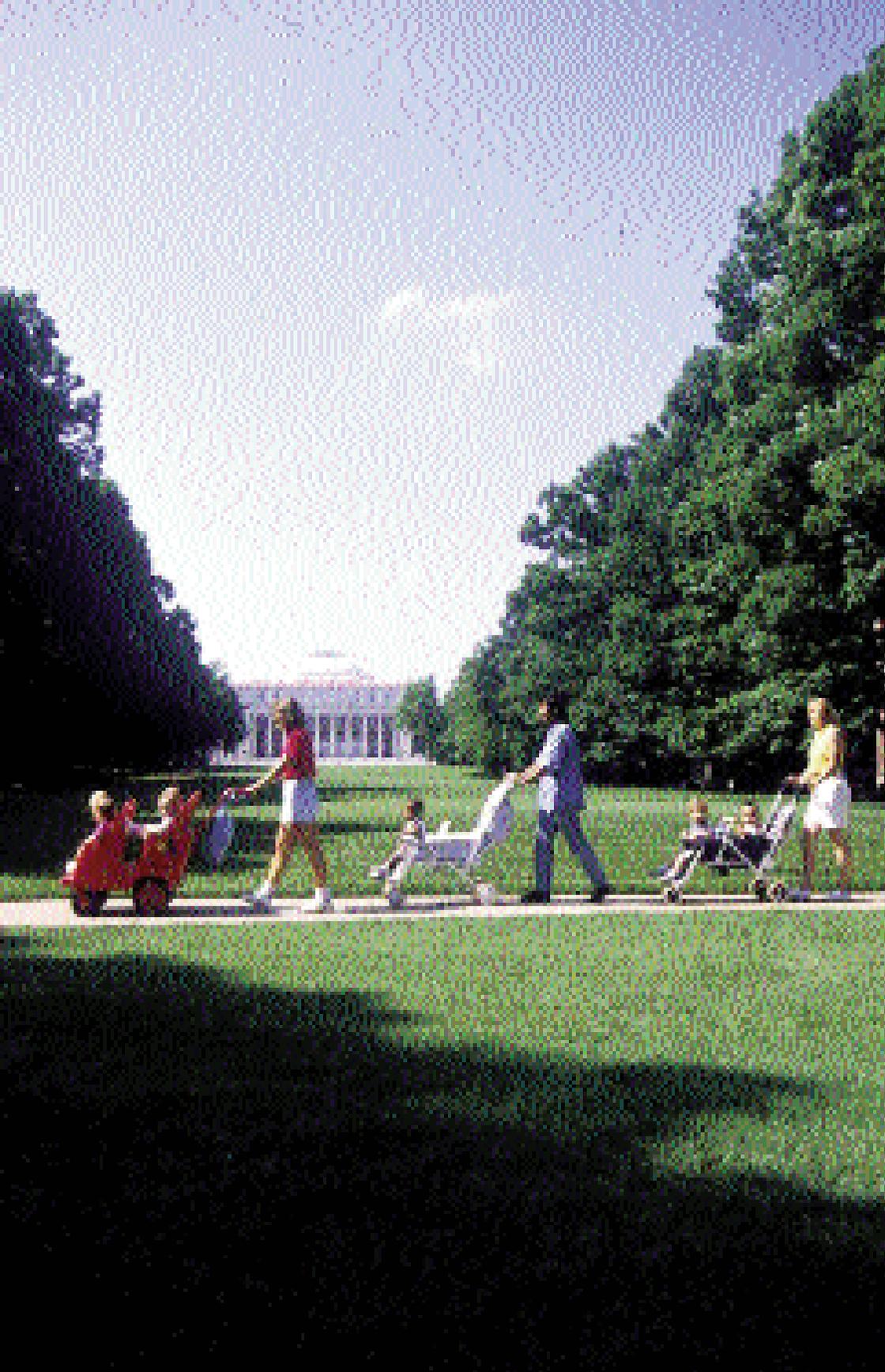
Psychology 1700. Social and Emotional Context of Cognition

Psychology 1750. Social and Personality Development

Psychology 2000. Language and Representational Systems

Psychology 2100. Advanced Topical Seminar (may be repeated provided no duplication of content)

Special Education 2030. Introduction to Language and Communication



Majors in Early Childhood, Elementary, and Secondary Education

CHAIR, DEPARTMENT OF TEACHING AND LEARNING Patrick W. Thompson

PROFESSORS EMERITI Jerold P. Bauch, Elizabeth Spencer Goldman

PROFESSORS David M. Bloome, Paul A. Cobb, Carolyn M. Evertson, Dale C. Farran, Charles B. Myers, Victoria J. Risko, Patrick W. Thompson

PROFESSOR OF THE PRACTICE EMERITA Earline D. Kendall

ASSOCIATE PROFESSORS Clifford A. Hofwolt, Charles K. Kinzer, Deborah W. Rowe, Robert D. Sherwood

ASSOCIATE PROFESSOR OF THE PRACTICE Ann M. Neely

ASSISTANT PROFESSORS Rachelle S. Feiler, Marcy Singer Gabella

ASSISTANT PROFESSOR OF THE PRACTICE Amy B. Palmeri

SENIOR LECTURER Margaret W. Smithey

Early Childhood Education

P

I THE major in early childhood education (ECE) is a field-oriented program designed to prepare students for work with children in nursery schools, preschool programs, and primary grades (grades PreK-3). Beginning in the freshman year, students observe and participate in local schools and agencies and in experimental classrooms on campus. Most Liberal Education Core courses are taken in the College of Arts and Science.

Students must combine a major in early childhood education with a second major in Child Studies. Course work beyond the standard 120-hour program may be required for some double majors.

Vanderbilt students seeking teacher licensure must apply through the Office of Teacher Licensure at Vanderbilt and must meet licensure requirements in effect at the time of their graduation, which may be different from licensure requirements in effect at the time they entered Vanderbilt. Licensure requirements are currently undergoing change. Each year, teacher licensure candidates should consult the current Vanderbilt *Undergraduate Catalog*, the *Undergraduate Guide to Teacher Licensure* published by the Vanderbilt Office of Teacher Licensure, and the *Undergraduate Handbook* published by the Office of Undergraduate Academic Affairs.

B.S. Degree Requirements

Early Childhood Education (PreK–3 Licensure)*Liberal Education Core Requirements. 62 hours.*

COMMUNICATIONS. *7 hours.*

Common Core: 6 hours.

At least one English writing course is required. A communication studies course is also required.

One of: English 100W, 104W, 105W, 106W, 109W, 112W, 120W

One of: Communication Studies 100, 101 or Theatre 100

Plus: ED 2040

HUMANITIES. *9 hours.*

Common Core: 9 hours.

One of:

Classics 130, 146, 150, 160, 175, 211, 220

Humanities 105W, 106W, 107W, 108W, 140, 141, 150, 151, 156, 175, 224, 265

Theatre 100, 201, 202, 203, 204, 232, 271

English 104W, 105W, 106W, 109W, 112W, 118W

English 208a or above

Chinese 202

French 101b and above

German 102 and above

Greek 202 and above

Hebrew 111b and above

Italian 101b and above

Japanese 202 and above

Latin 102 and above

Portuguese 200 and above

Russian 102 and above

Spanish 101b and above

Philosophy (Any course)

Religion (Any course)

Women's Studies 150, 220, 230, 255

One Fine Arts Elective from either Art or Music (except MUSO 100)

Required: ENED 2000

MATHEMATICS. *9 hours.*

Common Core: 6 hours.

Required: One Math course and one Statistics course (Math 127a or PSY 2101)

Plus: MTED 2100

NATURAL SCIENCE. *7 hours.*

Common Core: 7 hours. Must include 1 lab.

One of: Chemistry, Geology, Physics, Astronomy, or SCED 2200

Required: Biology (BIOL 105 recommended)

SOCIAL SCIENCES. *12 hours.*

Common Core: 12 hours.

Required: One course in American History

Required: One course in the study of a culture other than your own

African American Studies 101, 263, 294a, 294b

Anthropology 130, 210, 214, 231, 237, 241, 247

East Asian Studies 240
 English 263, 271
 Fine Arts 200, 214, 252, 253, 254
 History 155, 157, 239, 241, 247-50, 253, 264, 278, 280
 Music Literature 160, 170, 171
 Political Science 102, 214, 216, 217, 219
 Religious Studies 112, 113, 114, 130, 132, 133
 Sociology 255
 Women's Studies 230, 231, 232, 233, 238, 239
 Required: PSY 1630, SSED 2100

LIBERAL EDUCATION ELECTIVES. *18 hours.*

Professional Education Core. 24 hours.

EDUC 2117, 2130, 2140, 2150, 2170, 2270; HMED 2250; SPED 2420

Field Experiences. 15 hours.

EDUC 2116, 2151, 2291, 2702; SPED 2421

Interdisciplinary Major: Child Studies 24 hours.

Elementary Education

I THE major in elementary education is field-oriented and designed to prepare students to teach children in grades K-8. Beginning in the freshman year, students observe and participate in local schools and experimental classrooms on campus. Most Liberal Education Core courses are taken in the College of Arts and Science.

Students must combine a major in elementary education with a second major in the liberal arts, an interdisciplinary major, or another major offered by Peabody College or the College of Arts and Science. Course work beyond the standard 120-hour program may be required for some double majors.

Vanderbilt students seeking teacher licensure must apply through the Office of Teacher Licensure at Vanderbilt and must meet licensure requirements in effect at the time of their graduation, which may be different from licensure requirements in effect at the time they entered the program. Licensure requirements are currently undergoing change. Each year, teacher licensure candidates should consult the current Vanderbilt *Undergraduate Catalog*, the *Undergraduate Guide to Teacher Licensure* published by the Vanderbilt Office of Teacher Licensure, and the *Undergraduate Handbook* published by the Office of Undergraduate Academic Affairs.

B.S. Degree Requirements

Elementary Education (K–8 Licensure)

Liberal Education Core Requirements. 60 hours.

COMMUNICATIONS. *7 hours.*

Common Core: 6 hours.

At least one English writing course is required. A communication studies course is also required.

One of: English 100W, 104W, 105W, 106W, 109W, 112W, 120W

One of: Communication Studies 100, 101, or Theatre 100

Plus: EDUC 2040

HUMANITIES. *9 hours.*

Common Core: 9 hours.

One of:

Classics 130, 146, 150, 160, 175, 211, 220

Humanities 105W, 106W, 107W, 108W, 140, 141, 150, 151, 156, 175, 224, 265

Theatre 100, 201, 202, 203, 204, 232, 271

English 104W, 105W, 106W, 109W, 112W, 118W

English 208a or above

Chinese 202

French 101b and above

German 102 and above

Greek 202 and above

Hebrew 111b and above

Italian 101b and above

Japanese 202 and above

Latin 102 and above

Portuguese 200 and above

Russian 102 and above

Spanish 101b and above

Religion: Any course

Philosophy: Any course

Women's Studies 150, 220, 230, or 255

One Fine Arts Elective from either Art or Music (except MUSO 100)

One of: ENED 2000 or 2920

MATHEMATICS. *9 hours.*

Common Core: 6 hours.

One of the Math sequences: Math 127a and 127b, or Math 140 and 180, or one Math Course and PSY 2101

Plus: MTED 2200

NATURAL SCIENCE. *11 hours.* At least two laboratory science courses are required.

Common Core: 7 hours, 1 lab.

Biology 101 *or*

Chemistry 101a *or*

Physics 110a & 111a *or*

SCED 2200

Plus 4 hours: Chemistry 100, 101b, 102a & 104a, 102b & 104b, 103ab

Biology 100, 105, 119, 129

Geology 100 or 101 or 104, 102, 103

Physics 101, 110b & 111b, 117ab, 121ab

Astronomy 101, 102, 175

SOCIAL SCIENCES. *9 hours.*

Common Core: 9 hours.

Required: One course in American History

Required: One course in the study of a culture other than your own

African American Studies 101, 263, 294a, 294b

Anthropology 130, 210, 214, 231, 237, 241, 247

East Asian Studies 240

English 263, 271

Fine Arts 200, 214, 252, 253, 254

History 155, 157, 239, 241, 247-50, 253, 264, 278, 280

Music Literature 160, 170, 171

Political Science 102, 214, 216, 217, 219

Religious Studies 112, 113, 114, 130, 132, 133

Sociology 255

Women's Studies 230, 231, 232, 233, 238, 239

Required: PSY 1630

LIBERAL EDUCATION ELECTIVES. *15 hours.*

Any non-education courses.

Professional Education Core. 28 hours.

EDUC 1020, 2215, 2217, 2270; MTED 2250; SCED 2250; SSED 2210; HMED 2250; SPED 1010; PSY 2310

Field Experiences. 15 hours.

EDUC 2210, 2216, 2250, 2290, 2701

Additional hours toward major or electives. 17 hours.

Secondary Education

I THE major in secondary education is designed to prepare the student to teach one or more subjects at the secondary level (grades 7–12). Students must complete Liberal Education Core requirements, Professional Education requirements, and a primary area of emphasis in at least one endorsement field, which involves 27 to 36 hours of course work in the discipline and results in a major in that area as defined by the College of Arts and Science. Specific requirements for a second area of endorsement may be obtained from the Office of Teacher Licensure, Room 410, Social Religious Building. Students must take the appropriate methods course for each area of endorsement.

Vanderbilt students seeking teacher licensure must apply through the

Peabody Office of Teacher Licensure and must meet licensure requirements in effect at the time of their graduation, which may be different from licensure requirements in effect at the time they entered Vanderbilt. Licensure requirements are currently undergoing change. Each year, teacher licensure candidates should consult the current Vanderbilt *Undergraduate Catalog*, the *Undergraduate Guide to Teacher Licensure* published by the Vanderbilt Office of Teacher Licensure, and the *Undergraduate Handbook* published by the Office of Undergraduate Academic Affairs.

B.S. Degree Requirements **Secondary Education (7–12 Licensure)**

Liberal Education Core Requirements. 60 hours.

COMMUNICATIONS. *7 hours.*

Common Core: 6 hours.

One of: English 100W, 104W, 105W, 106W, 109W, 112W, 120W

One of: Communication Studies 100, 101, or Theatre 100

Plus: EDUC 2040

HUMANITIES. *9 hours.* Courses from at least two areas required.

Humanities

Classics 130, 146, 150, 160, 175, 211, 220

Humanities 105W, 106W, 107W, 108W, 140, 141, 150, 151, 156, 175, 224, 265

Literature

Theatre 100, 201, 202, 203, 204, 232, 271

English 104W, 105W, 106W, 109W, 112W, 118W

English 208a or above

Language

Chinese 202

French 101b and above

German 102 and above

Greek 202 and above

Hebrew 111b and above

Italian 101b and above

Japanese 202 and above

Latin 102 and above

Linguistics 200 and above

Portuguese 200 and above

Russian 102 and above

Spanish 101b and above

Fine Arts (All regular Fine Arts courses)

Music (All regular courses offered through Blair except MUSO 100)

Philosophy (All regular courses)

Religion (All regular courses)

Women's Studies 150, 220, 230, or 255

MATHEMATICS. *6 hours.*

Two courses from the Math Department, or one Math course and PSY 2101

NATURAL SCIENCE. *7 hours.*

Common Core: 7 hours, 1 lab.

Any course from two of the following areas: Chemistry, Biology, Geology, Physics, or Astronomy
SOCIAL SCIENCES. *9 hours.*

Common Core: 9 hours, 2 fields.

One course from each of the following areas required:

American History

The study of a culture other than your own

African American Studies 101, 263, 294a, 294b

Anthropology 130, 210, 214, 231, 237, 241, 247

East Asian Studies 240

English 263, 271

Fine Arts 200, 214, 252, 253, 254

History 155, 157, 239, 241, 247-50, 253, 264, 278, 280

Music Literature 160, 170, 171

Political Science 102, 214, 216, 217, 219

Religious Studies 112, 113, 114, 130, 132, 133

Sociology 255

Women's Studies 230, 231, 232, 233, 238, 239

Social science elective.

LIBERAL EDUCATION ELECTIVES. *23 hours.*

Any courses offered by the College of Arts and Science.

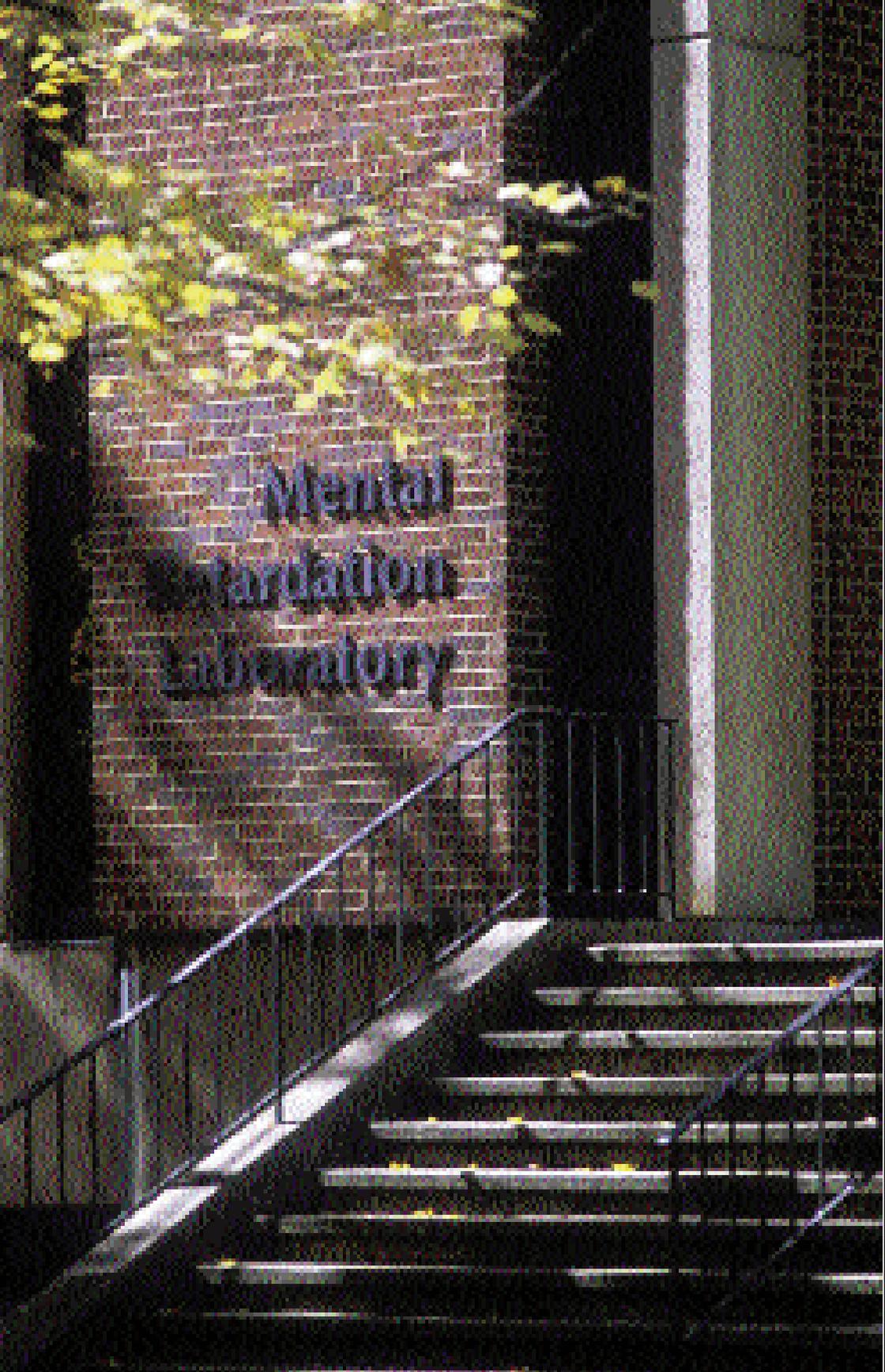
Professional Education Core. 20 hours.

EDUC 1020, 2310, 2320, 2920; SPED 1010; Teaching Methods course; PSY 2320

Field Experiences. 15 hours.

EDUC 2340, 2350, 2360; EDUC 2292, 2703

Additional hours toward major or electives. 25 hours.

The image shows the exterior of a building with a brick wall. A set of concrete stairs with a metal railing leads up to the entrance. The text "Mental Retardation Laboratory" is mounted on the brick wall. A tree with yellow leaves is visible on the left side of the frame. The scene is lit with natural light, creating shadows on the stairs and wall.

Mental
Retardation
Laboratory

Major in Special Education

CHAIR Daniel J. Reschly

PROFESSORS Anne L. Corn, Douglas Fuchs, Lynn S. Fuchs, Ann P. Kaiser, Daniel J. Reschly, Travis I. Thompson, Mark Wolery

RESEARCH PROFESSORS Teris K. Schery, Paul J. Yoder

ASSOCIATE PROFESSORS Joseph J. Cunningham, Carolyn Hughes, Craig H. Kennedy

ASSISTANT PROFESSOR Donald L. Compton, Ann N. Garfinkle, Joseph H. Wehby

ASSISTANT PROFESSORS OF THE PRACTICE Kimberly J. Paulsen, Ruth A. Wolery

I THE undergraduate program in special education prepares students to work with persons with disabilities and leads to licensure in special education. Students pursue an interdisciplinary major in exceptional learning with emphasis in one of the five specialty areas: mild and moderate disabilities (modified program), multiple and severe disabilities (comprehensive program), visual impairment, hearing impairment, or early childhood/ preschool. This major can be combined with other majors in Education, Human and Organizational Development, Cognitive Studies, Child Development, or Arts and Science. The program is field oriented and problem centered, with most professional courses requiring direct involvement with disabled children. Beginning in the freshman year, students observe and work in a variety of educational settings in local schools and in experimental classrooms on campus.

Vanderbilt students seeking teacher licensure must apply through the Office of Teacher Licensure at Vanderbilt and must meet licensure requirements in effect at the time of their graduation, which may be different from licensure requirements in effect at the time they entered the program. Each year, teacher licensure candidates should consult the current Vanderbilt *Undergraduate Catalog*, the *Undergraduate Guide to Teacher Licensure* published by the Vanderbilt Office of Teacher Licensure, and the *Undergraduate Handbook* published by the Office of Undergraduate Academic Affairs.

B.S. Degree Requirements

Special Education

Specializations are available in mild to moderate disabilities (grades K–12 modified program), multiple and severe disabilities (grades K–12 comprehensive program), visual impairment (grades PreK–12), hearing impairment (grades PreK–12), and early childhood/preschool (grades PreK–1). Total hours will vary depending on the area of specialization.

Liberal Education Core Requirements. 59-62 hours.

COMMUNICATIONS. *10 hours.* At least one English writing course is required. A communication studies course also is required.

One of: English 100W, 104W, 105W, 106W, 112W, 120W

One of: Communication Studies 100, 101, or Theatre 100

Plus: EDUC 2040

Plus: SPED 2030 Introduction to Language and Communication

HUMANITIES. *9 hours.*

One Literature course:

Classics 130, 146, 150, 160, 175, 211, 220

Humanities 105W, 106W, 107W, 108W, 140, 141, 150, 151, 156, 175, 224, 265

English 104W, 105W, 106W, 109W, 112W, 118W (if course is not already counted under Communications)

English 208a or above

Chinese 202, French 101b and above, German 102 and above, Greek 202 and above,

Hebrew 111b and above, Italian 101b and above, Japanese 202 and above, Por-

tuguese 200 and above, Russian 102 and above, or Spanish 101b and above

Philosophy: Any course

Religion: Any course

Women's Studies 150, 220, 230, or 255

One Fine Arts course:

Art (All regular courses)

Music (All regular courses, except MUSO 100)

Theatre 100, 201, 202, 203, 204, 232, 271

MATHEMATICS. *6 hours.*

Math 127a and 127b, or 140 and 180; or one Math course and PSY 2101

NATURAL SCIENCE. *7-8 hours.* One laboratory science course is required.

Recommended courses are Chemistry 101a; Physics 110a and 111a; Biology 101

Other courses include Astronomy 101, 102, 175; Biology 100, 105, 119, 129; Chemistry

100, 101b, 102a, 102b, 103a, 103b, 104a, 104b; Geology 100 or 101, 102, 103, 104;

Physics 110a, 110b, and 111a, 111b, 117a, 117b, 121a, 121b

SOCIAL SCIENCES. *21 hours. (Common Core 9 hours)*

Required: One course in American History

Required: One course in the study of a culture other than your own

African American Studies 101, 263, 294a, 294b

Anthropology 130, 210, 214, 231, 237, 241, 247

East Asian Studies 240
 English 263, 271
 Fine Arts 200, 214, 252, 253, 254
 History 155, 157, 239, 241, 247-50, 253, 264, 278, 280
 Music Literature 160, 170, 171
 Political Science 102, 214, 216, 217, 219
 Religious Studies 112, 113, 114, 130, 132, 133
 Sociology 255
 Women's Studies 150, 220, 230, 255

Required: PSY 2310 Educational Psychology
 Plus: EDUC 1020 Society, School, and the Teacher
 PSY 1630 Developmental Psychology
 SPED 1010 Introduction to Exceptionality
 SPED 2020 Family Intervention

LIBERAL EDUCATION ELECTIVES.

Any non-education courses.

Specializations.

The following SPED courses are taken as part of the Liberal Education Core, but are also requirements in each area of specialization.

SPED 1010. Introduction to Exceptionality
 SPED 2020. Family Intervention
 SPED 2030. Introduction to Language and Communication

The following courses are required in each area of specialization.

SPED 1000. Practicum: Observation
 SPED 2010. Introduction to Instructional Models
 SPED 2110. Managing Academic and Social Behavior
 SPED 2111. Practicum: Management
 SPED 2900. Professional Seminar
 SPED 2901 or 2911. Student Teaching

MODIFIED PROGRAM CORE.

SPED 2870. Accommodating Academic Diversity in Classrooms
 SPED 2810. Assessment Strategies for Students with Disabilities
 SPED 2811. Practicum: Assessment Strategies
 SPED 2820. Instructional Procedures
 SPED 2821. Practicum: Instructional Procedures
 SPED 2830. Advanced Instruction Procedures
 SPED 2831. Practicum: Advanced Instruction Procedures
 One SPED elective selected by student and adviser.

COMPREHENSIVE PROGRAM CORE.

SPED 2300. Procedures for Students with Severe Disabilities
 SPED 2301. Practicum: Procedures for Students with Severe Disabilities
 SPED 2330. Procedures for Multiple Disabilities
 SPED 2331. Practicum: Multiple Disabilities
 SPED 2340. Procedures for Transition to Adult Life
 SPED 2341. Practicum: Transition to Adult Life
 Two SPED electives selected by student and adviser.

VISUAL IMPAIRMENT PROGRAM CORE.

- SPED 2500. Sensory Perception, Anatomy, Physiology, and Hygiene of Eye
- SPED 2510. Educational Procedures for Students with Visual Impairment
- SPED 2530. Braille Reading and Writing
- SPED 2540. Communication Skills for Students with Visual Impairment
- SPED 2550. Orientation and Mobility for Teachers of Visually Impaired
- SPED 2810. Assessment Strategies for Students with Disabilities
- SPED 2811. Practicum: Assessment Strategies

HEARING IMPAIRMENT PROGRAM CORE.

- SPED 2600. Audiology in Education
- SPED 2601. Laboratory: Audiology in Education
- SPED 2610. Speech Development and Improvement for Children with Hearing Impairment
- SPED 2620. Language and Literacy in the Deaf or Hard of Hearing Child
- SPED 2621. Practicum: Language and Speech Development of Children with Hearing Impairment
- SPED 2630. Educational Programming for Children with Hearing Impairment
- SPED 2631. Practicum: Educational Programming for Children with Hearing Impairment
- SPED 2640. Beginning Manual Communication
- SPED 2650. Advanced Manual Communication

EARLY CHILDHOOD PROGRAM CORE.

- SPED 2330. Procedures for Students With Multiple Disabilities
 - SPED 2331. Practicum: Multiple Disabilities
 - SPED 2400. Early Education for Children with Disabilities
 - SPED 2401. Practicum: Early Education for Children with Disabilities
 - SPED 2410. Early Intervention for Infants with Disabilities
 - SPED 2420. Developmental Assessment Strategies
 - SPED 2421. Practicum: Developmental Assessment Strategies
- One SPED elective selected by student and adviser.

Minor in Special Education

The Minor in Special Education provides students with an opportunity to develop familiarity and expertise in working with children who have serious learning and social behavior problems. The first three courses are required for all minors. Then students choose an additional three (courses) in a cluster that matches their area of interest. Individual course clusters can be arranged with Special Education faculty to match student interest. The minor requires 16 hours.

REQUIRED:

- SPED 1010 Introduction to Exceptionality
- SPED 2110 Managing Academic and Social Behavior
- SPED 2111 Practicum: Managing Academic and Social Behavior

Option 1: Clinical and School Services Cluster

- SPED 2810 Assessment Strategies for Students with Disabilities
- SPED 2010 Introduction to Instructional Models
- SPED 2870 Special Topic: Accommodating Academic Diversity in Classrooms

This option provides students with an opportunity to develop familiarity and expertise in working with children who have learning disabilities, behavior disorders, or mild mental retardation.

Option 2: Community Involvement Cluster

SPED 2340 Transition to Adult Life

SPED 2341 Practicum: Transition to Adult Life

SPED 2300 Procedures for Students with Severe Disabilities

SPED 2301 Practicum: Procedures for Students with Severe Disabilities

This option provides students with an opportunity to develop familiarity and expertise in working with individuals who have multiple or severe disabilities. The focus is on basic communication, social, motor, academic, adaptive behavior, vocational, and community living skills.

Option 3: Early Childhood Cluster

SPED 2400 Early Education for Children with Disabilities

SPED 2420 Assessment Strategies for Young Children

SPED 2020 Family Intervention

This option provides students with an opportunity to develop familiarity and expertise in working with infants, toddlers, young children, and their families in a variety of settings and roles. The children would have a wide range of developmental delays from at-risk for delays to more severe delays in cognitive, communication, social, adaptive behavior, and/or motor skills.

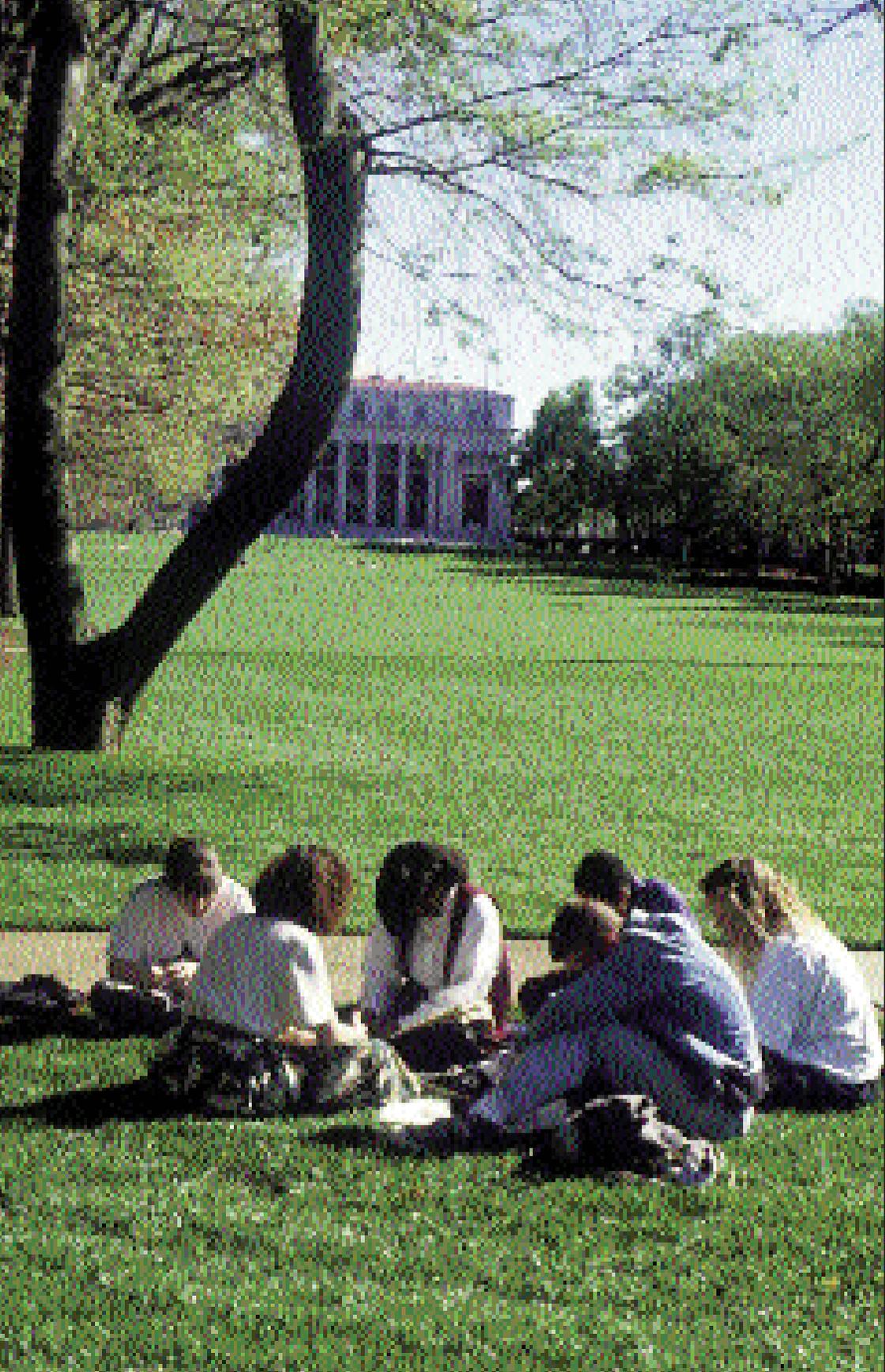
Option 4: Hearing Impaired Cluster

SPED 2600 Audiology

SPED 2610 Speech for the Hearing Impaired Child

SPED 2640 Manual Communications

This option provides students with an opportunity to develop familiarity and expertise in working with children and young adults who have a hearing disability which may range from a mild to a profound hearing loss.



Major in Human and Organizational Development

DIRECTOR OF THE PROGRAM Robert B. Innes

PROFESSORS Penelope H. Brooks, David S. Cordray, Robert L. Crowson, Jr., Paul R. Dokecki, Ellen B. Goldring, James W. Guthrie, James H. Hogge, Mark W. Lipsey, John R. Newbrough, Howard M. Sandler

PROFESSORS OF THE PRACTICE Vera A. Stevens Chatman, Dwight E. Giles, Jr., Sharon L. Shields

ASSOCIATE PROFESSORS Jacob E. Adams, Jr., John Braxton, R. Wilburn Clouse, Craig Anne Heflinger, Kathleen Hoover-Dempsey, Robert B. Innes, Richard L. Percy, Douglas D. Perkins, Jeanne M. Plas

ASSOCIATE PROFESSORS OF THE PRACTICE Janet S. Eycler, Edward A. Martin
RESEARCH ASSOCIATE PROFESSOR Georgine M. Pion

ASSISTANT PROFESSORS Mark D. Cannon, John M. Maslyn, Mary R. Watson

ASSISTANT PROFESSORS OF THE PRACTICE Bonita B. Barger, Bruce T. Caine, Gina L. Frieden

SENIOR LECTURERS Patricia Arnold, Brian A. Griffith, Dorothy Marcic, Elise David McMillan

INSTRUCTOR IN THE PRACTICE Kimberly D. Bess

I THE Human and Organizational Development major is designed for students interested in careers that involve finding solutions to human problems in organizations and communities. Graduates are prepared to assume positions in corporations and businesses, government agencies, and non-profit organizations. Many students in the program enter graduate programs or professional programs in business, counseling, divinity, education, health promotion, human resource development, law, or medicine.

The curriculum is planned to ensure that students obtain a strong foundation in science and liberal arts, with emphasis on developing writing, oral presentation, and quantitative skills. Courses in the program's core curriculum concentrate on building basic skills in interpersonal communication, group leadership, organizational development, administration, and training. Students acquire an understanding of human behavior in groups, organizations, and larger systems.

In addition to the core curriculum, students select one of three areas of concentration that provide a focus for their study during the junior and senior years: Community Development and Social Policy, Health and Human Services, or Leadership and Organizational Effectiveness.

The program makes use of the active learning approach. Students learn new ideas and methods through seminars, simulation, role playing, case studies, field experiences, and interaction with professionals in the field. Students can test their understanding of what they have learned in a full-time internship in the senior year. Internships are conducted in Nashville, Atlanta, New

York, San Francisco, Washington, D.C., and Cambridge, England.

Curriculum

Students take a minimum of 120 hours, distributed as follows. [See explanatory material above and program of studies work sheets (available in the Office of Undergraduate Academic Affairs) for slight variations according to major.]

Liberal Education Core Requirements. 40 hours.

COMMUNICATIONS. *6 hours.* At least one English writing course is required. A communications studies course is recommended.

English 100W, 104W, 105W, 106W, 109W, 112W, 120W
 Communication Studies (All regular* courses)
 Humanities/Comparative Literature 105W, 106W, 107W, 108W

HUMANITIES. *9 hours.* Two of the fields listed below must be represented. Human and Organizational Development majors must take Philosophy 100 or 105.

Survey Courses

Classics 130, 146, 150, 160, 175, 211, 220

Computer Science 151

Humanities 105W, 106W, 107W, 108W, 140, 141, 150, 151, 156, 224, 265

Fine Arts (All regular* Fine Arts courses except studio courses)

Film Studies: (All regular* courses)

Foreign Language (All regular* courses 101b or 102 or above)

Chinese or Japanese 202-216

Literature

Chinese or Japanese 241 and above

English 104W, 105W, 106W, 109W, 112W, 118W, 120W (if course is not already counted under Communications)

English 208a or above

French 220 and above

German 221 and above (except 213, 214, 220)

Greek 201 and above

Humanities 105W, 106W, 107W, 108W; 140, 141, 150, 151, 156

Latin 201 and above (except 225)

Portuguese 205 and above (except 207, 223)

Russian 221 and above (except 257, 258)

Spanish 203, 221, and above

Theatre 100, 201, 202, 203, 204, 232, 271

Music: DANC 110 and above; MUSC 106 and above; MUSL 140 and above

Philosophy 100 or 105 is required.

Religion (All regular* courses)

Women's Studies 150, 220, 230, 255

MATHEMATICS. *6 hours.* One semester of statistics is required.

One of: Mathematics 127a, 127b, 133, 140, 150a, 150b, 155a, 155b, 165, 180; Psy 2102
Statistics: Psychology 209, 2101; Economics 150

NATURAL SCIENCE. *7 hours.* At least one laboratory science course is required. Any course or combination of the following, provided course content is not repeated. Check department listings for credit restrictions.

Astronomy 101, 102, 130, 175

Biological Sciences 110a, 110b

Biology 100, 105, 119, 129, 200-level courses

Chemistry 100, 101a, 101b, 102a, 102b, 103a, 103b, 104a, 104b

Geology 100, 101, 102, 103, 104, 106, 150, 225

Physics 101, 108, 110a and 111a, or 110b and 111b, 117a, 117b, 121a, 121b

Nursing 150, 210a, 210b

SOCIAL SCIENCES. *9 hours* required. Human and Organizational Development majors must take Economics 100.

Anthropology (All regular* courses except 205)

Economics 100, 101

History (All regular* courses except 131)

Music Literature 141, 160, 170, 171

Political Science 100, 101, 102

Psychology (All regular* Peabody and Arts and Science courses except 209, 222, 225, 231, 242; Psy 2101, 2102)

Sociology (All regular* courses)

Women's Studies (All regular* courses except 150, 220, 230, 252, 255)

Liberal Core Electives. 3 hours required.

*Special topics courses are not ordinarily acceptable to meet Liberal Education Core requirements and require prior approval as substitute courses. Independent study courses are not acceptable to meet Liberal Education Core requirements.

Human and Organizational Development Seminars. 20–22 hours.

These seminars are listed in the Courses of Study section under Human and Organizational Development and will include the following topics:

- Advanced seminar in human development
- Application of theory to practical situations
- Communication and leadership skills
- Developing human and organizational talent
- Human service and private sector organizations
- Life-span human development
- Organizational and human resource development
- Public policy analysis
- Senior project
- Small group behavior
- Systematic inquiry

Practicum and Internship. 12–18 hours.

The program includes a full-time internship (12–15 hours) and an optional 3-hour practicum experience.

Track. 15 hours. (Students with a second major or Business Administration minor take 9 hours.)

A block of courses within the student's area of concentration: (1) Community Development and Social Policy, (2) Health and Human Services, and (3) Leadership and Organizational Effectiveness,

Electives. 25-39 hours.

The Minor in Human and Organizational Development

The Minor in Human and Organizational Development consists of 18 hours in the following courses:

Required Courses: 9 hours

HOD 1000. Applied Human Development (3)

HOD 1100. Intrapersonal Communications (3)

HOD 1200. Understanding Organizations (3)

Elective Courses: 9 hours

9 hours at the 2000-level with either

(1) All nine hours in a given track (Leadership or HHS/Community)

or

(2) Two of the three introductory track courses:

HOD 2500. Health and Human Service Professions

HOD 2600. Social Problems I: Community and Social Perspectives

HOD 2700. Leadership Theory and Practice

and

One additional 3-hour HOD course





Honors

1

Founder's Medal

The Founder's Medal, signifying first honors, was endowed by Commodore Cornelius Vanderbilt as one of his gifts to the University. The recipient is named by the Dean after consideration of faculty recommendation and overall academic achievements, as well as grade point averages of the year's highest ranking *summa cum laude* graduates.

Academic Honors Designation

Honors, which are noted on diplomas and published in the *Commencement Program*, are earned as follows:

Summa cum laude. Students who earn a grade point average of 3.750 or better.

Magna cum laude. Students who earn a grade point average of 3.500 or better.

Cum laude. Students who earn a grade point average of 3.250 or better.

The Dean's List

The Dean's List provides a means of recognizing outstanding academic performance in a semester. Students are named to the Dean's List if they achieve a minimum grade point average of 3.500 for Honors, or 4.000 for Highest Honors, while enrolled for at least 12 graded hours with no temporary or missing grades.

Kappa Delta Epsilon

Kappa Delta Epsilon is an honorary professional education society established in 1935 in Georgia. Kappa Delta Epsilon recognizes outstanding students preparing to enter teaching or related professions. The professional qualifications of members include appreciation of subject matter, ability to provide important contributions to selected professions, and scholarship. Membership is limited to sophomores, juniors, and seniors with a 3.000 or better grade point average.

2000 Founder's Medalist Steven Craig
DeCaluwe



Kappa Delta Pi

Kappa Delta Pi is an education honor society organized in 1911 at the University of Illinois to foster excellence in scholarship, high personal standards, improvement in teacher preparation, distinction in achievement, and contributions to education. Membership is limited to juniors and seniors with a grade point average of 3.500 or better, and graduate students with a grade point average of 3.750 or better. Candidates for membership must have completed at least 9 hours in education or psychology.

Honor Societies for Freshmen

Freshmen who earn grade point averages of 3.500 or better for their first semester are eligible for membership in the Vanderbilt chapters of Phi Eta Sigma and Alpha Lambda Delta.

Awards

DEPARTMENT OF TEACHING AND LEARNING AWARD FOR OUTSTANDING PROFESSIONAL PROMISE (SECONDARY EDUCATION). Awarded annually to the graduating senior in the Department of Teaching and Learning who has shown exceptional promise as a future teacher at the secondary school level.

DOROTHY J. SKEEL AWARD FOR OUTSTANDING PROFESSIONAL PROMISE (ELEMENTARY/EARLY CHILDHOOD EDUCATION). Awarded annually to the graduating senior in the Department of Teaching and Learning who has shown exceptional promise as a future teacher at the elementary school level.

SENIOR THESIS AWARD. Awarded to the graduating senior in the Human and Organizational Development Program who has submitted the most outstanding senior thesis. The winner is selected from a group of five finalists who make an oral presentation of their theses to a panel of five professors.

THE DEPARTMENT OF SPECIAL EDUCATION DISTINGUISHED ACADEMIC ACHIEVEMENT AWARD. Awarded annually to the graduating senior in the Department of Special Education who has exemplified the highest level of academic achievement.

THE DISTINGUISHED SERVICE IN SPECIAL EDUCATION AWARD. Awarded annually to the graduating senior in the Department of Special Education who, in his or her career at Vanderbilt, has exemplified the highest commitment to professional service.

THE PEABODY ALUMNI AWARD. Awarded by the Peabody Alumni Association to a member of the graduating class who has demonstrated outstanding qualities of scholarship and leadership.

THE WILLIS D. HAWLEY AWARD. Awarded by students of Peabody College to a senior who, in his or her career at Vanderbilt, has exemplified Peabody's commitment of service to others.

DEAN'S AWARD FOR OUTSTANDING SCHOLARSHIP. Awarded to each *summa cum laude* graduate.

YOUNG ALUMNI BOARD AWARD. Awarded by Peabody students to a senior who has demonstrated outstanding qualities of scholarship, leadership, and commitment of service

to others. The recipient of this award represents the graduating class as a member of the alumni board for a two-year term.

PSYCHOLOGY AND HUMAN DEVELOPMENT UNDERGRADUATE HONORS AWARD. Awarded to the graduating senior who has successfully completed the Undergraduate Honors program in Cognitive Studies or Child Development and who has produced the best overall honor project.

EXCELLENCE IN CHILD DEVELOPMENT AWARD. Awarded to the graduating senior majoring in Child Development whose work in the opinion of the faculty of the Department of Psychology and Human Development exemplifies academic excellence.

EXCELLENCE IN COGNITIVE STUDIES AWARD. Presented annually by the Department of Psychology and Human Development to the graduating senior who most clearly exemplifies the goals of the Cognitive Studies Department.

HUMAN AND ORGANIZATIONAL DEVELOPMENT AWARDS. Established in 1999 and presented to the graduating seniors who exemplify the highest levels of scholarship and leadership in the Human and Organizational Development Program. The awards are given in these areas: Community Service, Outstanding Community Development and Social Policy, Outstanding Health and Human Services, and Outstanding Leadership and Organizational Effectiveness.

SPECIAL EDUCATION TEACHER OF EXCELLENCE AWARD. Awarded annually by the Department of Special Education to the graduating senior who has demonstrated the highest level of excellence in teaching in the area of special education.



Post-Baccalaureate Programs

PEABODY offers professional degree programs in the following areas. Details of the post-baccalaureate programs are published in the *Peabody College Catalog*, available on request from the Office of Admissions and Financial Aid at Peabody College.

<i>Major</i>	<i>Degree</i>	<i>Department</i>
Curriculum and Instructional Leadership	M.Ed., Ed.D.	Teaching and Learning
Early Childhood Education	M.Ed., Ed.D.	Teaching and Learning
Elementary Education	M.Ed., Ed.D.	Teaching and Learning
English Education	M.Ed., Ed.D.	Teaching and Learning
General Administrative Leadership	M.Ed., Ed.D.	Leadership and Organizations
Higher Education Administration	M.Ed., Ed.D.	Leadership and Organizations
Human Development Counseling	M.Ed.	Human and Organizational Development
Human Resource Development	M.Ed., Ed.D.	Leadership and Organizations
Language and Literacy	Ed.D.	Teaching and Learning
Mathematics Education	M.Ed., Ed.D.	Teaching and Learning
Reading Education	M.Ed.	Teaching and Learning
Science Education	M.Ed., Ed.D.	Teaching and Learning
School Administration	M.Ed., Ed.D.	Leadership and Organizations
Secondary Education	M.Ed.	Teaching and Learning
Social Studies Education	M.Ed., Ed.D.	Teaching and Learning
Special Education	M.Ed.	Special Education

Five-Year Program in Human and Organizational Development and Human Development Counseling

The combined five-year program in Human and Organizational Development (HOD) and Human Development Counseling (HDC) is designed to blend the undergraduate HOD program with the master’s level counselor preparation program in HDC. Students who successfully complete this combined program will earn their undergraduate B.S. degrees and also be professionally trained as human development counselors (with M.Ed. degrees) by the end of their fifth year at Peabody.



Under the combined five-year plan, HOD undergraduates take 18 credit hours of professional HDC courses during the senior year as part of the 120 hours required for the B.S. in human and organizational development. A fifth year (including summers) follows, during which students complete the additional 30 professional hours necessary for the 48-hour master's degree in human development counseling. Students who plan to pursue the five-year HOD/HDC program are required to abide by the following guidelines:

1. Students must make application to the HDC M.Ed. program by the end of the junior year.

2. Applicants must have a 3.000 grade point average, and must take the Miller Analogies Test (MAT) (required score of at least 50) or the Graduate Record Examination (GRE) (required composite score of at least 1000) during the junior year as part of their application to HDC.

3. Applicants would begin taking the initial 18 hours of the master's degree in HDC during the senior year. (See curriculum below for the sequence of course work.)

4. Applicants may take no more than 18 hours of HDC professional courses for post-baccalaureate credit in the senior year. Applicants must have at least a *B* average in these courses for them to be counted toward the master's degree in HDC. Courses may not be transferred from another university as part of the 48-hour master's degree.

Suggested Curriculum

HOD SENIOR YEAR (FALL AND SPRING).* 18 hours.

- HDC 3310. Theories of Counseling [3]
- HDC 3470. Psychology of Careers [3]
- HDC 3660. Developmental Counseling Psychology [3]
- HDC 3680. Counseling Diverse Populations [3]
- HDC 3760. Group Dynamics in HDC [3]
- HDC 3850. Pre-practicum in Counseling [3]

FIFTH YEAR (INCLUDING SUMMERS). 30 hours.

- HDC 3480. Addictions and the Human Services Professional [3]
- HDC 3510. Appraisal and Assessment [3]
- HDC 3670. Advanced Developmental Theory and Practice [3]
- HDC 3750. Consultation in Human Service Settings[3]
- HDC 3840. Research in Counseling [3]
- HDC 3870. Practicum in Counseling [1-2]
- HDC 3890. Internship in Counseling [5-10]
- Professional Electives [9]

* Students wishing to take HDC professional course work prior to the senior year must petition to do so.

Courses of Study

I

Human and Organizational Development

1000. Applied Human Development. Introduction to the processes of human development and how such development can be influenced. Emphasis is placed on social development and implications for solving personal and professional problems. The course focuses on late adolescent and young adult development. Corequisite: HOD 1001. [3]

1001. Intrapersonal Communication. The course is designed for first semester freshmen. It includes exploration and clarification of values, setting personal objectives, and preliminary skill building in active listening, assertiveness, and conflict resolution. Corequisite: HOD 1000. [1]

1020. Applied Human Development Laboratory: Values and Community Service. Seminars and field experience designed to help students explore their values about community service and their responsibilities to other people. Students are involved in values clarification activities and volunteer work in the community. [1]

1024. Interpersonal Communication. This course is designated for second semester freshmen. It provides skill development in interpersonal communication and group dynamics. Corequisite: HOD 1100. [1]

1100. Small Group Behavior. Designed to improve the student's ability to analyze behavioral patterns in groups such as leadership, conflict, and decision making and group roles. The student is expected to improve his/her abilities by effective participation in the group as well as in written analyses. Problems for analysis are drawn from events in the group and from theoretical readings. Corequisite: HOD 1024. [3]

1200. Understanding Organizations. Introduction to theory and research on human behavior in organizations. Aimed at providing a framework for understanding the dynamics of organizations around the basic issues that confront all organizations (e.g., goal setting, work performance, leadership, decision making, managing change). [3]

1400. Developing Human and Organizational Talent I. Focuses on career planning. Includes values clarification, personal assessment, goal setting, and exploration of various types of positions and employment settings through lecture, reading, and site visits. [3]

1410. Developing Human and Organizational Talent II. Survey of basic skills of career development focusing on job search strategies, résumé development, and interviewing skills. Students will search for and select an internship to be completed in the semester following this course. [1]

1700. Systematic Inquiry. Focuses on ways of knowing and gathering information to improve understanding and solve problems. Topics include focusing on a research question, research design, program evaluation techniques, and quantitative and qualitative methodologies. [3]

2000. Human Development Practicum. An intensive practicum experience in a community setting. Three contact hours per week required for each credit hour. Students will participate in a weekly seminar. [3]

2100. Public Policy. An exploration of the foundations of public policy, the policy process, and the factors that influence policy making at the national and state levels, with particular attention to the development of student analytic and writing skills. Prerequisite: Psci 100. [3]

2240. Multicultural Issues in Contemporary Society. This course broadly examines multiracial and multicultural issues so that students from a variety of disciplines will be able to benefit from the contents. The intent of the course, which draws on anthropological, educational, and organizational literature from a variety of popular readings, is to provide approaches, procedures, and techniques for gaining insight and understanding into different racial and cultural groups in order to promote acceptance of diversity in various environments, such as the classroom, or profit-making or nonprofit organizations. [3]

2260. Economics of Human Resources. An introduction to economics, with heavy emphasis on microeconomics of the family, household, consumer, and business firm. Applications to the economics of government, poverty, discrimination, labor markets, the environment, education, and other human resource and human development topics will be included. The class will be primarily lecture format with some small group interactions and discussions. [3] (Not offered 1999/2000)

2470. Introduction to Community Psychology. Literature and research in community psychology. History of the specialty, theories of community, models of intervention, community research strategies, ethnopsychology, and community development. [3]

2500. Health and Human Service Professions. Survey of health and human services careers; types of client populations and human problems covered; range of treatment and intervention approaches; professional issues including credentialing, certification, ethics and legal parameters, range of human service settings including the organizational arrangements, and professional cultures distinctive to health and human services agencies. [3]

2505. Counseling Theory and Techniques. (Not open to HDC majors) Intended for individuals who find themselves in a position to be helpful to others, but who lack the training and skills of the professional counselor. Focuses on a theoretical model for helping and the research and skills that support it. A major emphasis will be placed on an experiential component that will develop listening and responding skills in a laboratory setting under supervision. [3]

2510. Health Service Delivery to Diverse Populations. This course will focus on the study of value systems of diverse groups, as well as variables related to gender, age, lifestyle, religion, social class, race, geography, and developmental state, and how this relates to health status and health service needs. This course will provide students with a basic knowledge and understanding of diversity so that they may be more effective in serving the needs of all people. [3]

2520. Communications Skills for Health and Human Service Professions. This course focuses on a conceptual model for interpersonal effectiveness. Topics include training in listening skills, assertiveness skills, and conflict resolution. The course material will be presented in a manner that facilitates personal growth and also provides tools which contribute to professional growth. The format will be highly experiential. [3]

2530. Introduction to Health Promotion. This course is designed to enhance the student's understanding of health promotion concepts that relate directly to improved lifestyle behavior change and disease risk reduction. In addition, health promotion program development, program management, and program initiatives in a variety of settings will be addressed. [3]

2540. Introduction to Sports Medicine. Current topics in Sports Medicine, with an emphasis on prevention, management, and rehabilitation, and administrative aspects of sports medicine. [3]

2545. Women in Sports: History, Issues, Controversies, and Contributions to Leadership. This course will provide the opportunity to study the history of women in sports and to explore the implications that women's sports participation has on the individual, on institutions, and on society. In addition, such issues as governance and policy in women's sports, gender, contributing factors to leadership qualities, physiological perspectives, psychological perspectives, sport economics, and sport in the global community will be addressed. [3]

2580. Health and Human Services Seminar. Exploration of selected topics related to the health and human services track of the Human and Organizations Development Program. May be repeated for credit with change of topic. [3]

2600. Social Problems I: Community and Social Perspectives. Examines social problems from the perspectives of community psychology, social psychology, and sociology. Explores the definition, magnitude, effects, and causes of a social problem; community and social interventions that might be used to bring about change; and preparation of a set of recommendations for social policy at the local, state, and federal levels. Serves as the first core course in the community development and social policy track of the Human and Organization Development Program. [3]

2610. Social Problems II: Political, Economic, and Legal Aspects. This course examines the role of politics and economics in shaping our conceptions of social problems and the solutions proposed to address them. It will focus on providing students with a working knowledge of the tools of policy analysis used by economists and political scientists. [3]

2620. Action Research and Program Evaluation. This is a speciality core requirement for the Community Development and Social Policy (CDSPP) track in the Human and Organizational Development program. Course teaches policy-relevant field research methods in the context of action science. Students do an actual research project for a client organization and prepare a report with recommendations for policy and action. Students get experience in the conduct of the research as a team of a fictitious consulting organization. [3]

2630. Proposal Preparation. Proposals are necessary in most organizations when new projects or proposed projects are considered for adoption. The course uses grant proposal writing as a way to operationalize the generic process of proposal preparation. There are three goals: to provide a team work experience consulting with a client organization; to provide the opportunity to analyze a problem and design a program to solve it; and to write a program proposal as a team. [3]

2650. Reforming America's School. An in-depth examination of the challenges facing public education in the United States and the reforms that are reconfiguring the nation's elementary and secondary schools. Students explore the status and problems of American education, contexts of school reform, recent federal and state policy initiatives, and school restructuring. [3]

2680. Community Development and Social Policy Seminar. Exploration of selected topics related to the community development and social policy track of the Human and Organizational Development Program. May be repeated for credit with change of topic. [3]

2690. Special Topics in Human and Organizational Development. Exploration of special issues on topics related to human development. May be repeated for credit with change of topic. [1–3]

2700. Leadership Theory and Practice. A systematic study of the formal theories and models of the leadership process and the research supporting and challenging them. Students will complete a wide range of leadership self-assessments; design a leadership self-development plan; and participate in individual and group problem solving, decision making, conflict resolution, and performance appraisal simulations and case studies focusing on personal and organizational effectiveness. Prerequisite: HOD 1200 and 1700. [3]

2710. Challenges of Leadership. This course is designed as an extension of the study of leadership theory and practices begun in HOD 2700. The course is conducted in two versions, one built around intense self-assessments conducted in seminar groups of 15, the other designed around case studies and experiential learning activities in classes up to 30 students. Each format provides opportunities to investigate leadership concepts introduced in HOD 2700 in more depth. Prerequisite: HOD 2700. [3]

2720. Advanced Organizational Theory. A comprehensive study of current theories and applied research in organizational effectiveness. Emphasis is on the principles and practices of organizational restructuring, organizational development and planned changes, systems and processes, self-managed teams, and Total Quality. Experiential learning through simulations and field work will reinforce systematic inquiry, strategic planning, and applied organizational assessment skills. Prerequisite: HOD 1200 and 1700. [3]

2730. Introduction to Human Resources Development. An introduction to the theory and practice of human resource development (design and implementation of training in corporate or human service organizations). Special emphasis on roles played by HRD professionals and concepts and skills needed for entry into the profession. Prerequisite: Either HOD 2700 or 2720. [3]

2740. Human Resource Management. A comprehensive survey of human resource management theory, procedures, and practices, with emphasis on the organizational leader's role and responsibilities for recruiting and selection, placement and career development, employee relations, labor relations, performance appraisal, compensation and benefits, workplace ethics, equal employment opportunity, safety and health, legislation and workplace regulations, development of personnel policies and practices, and the techniques of strategic human resource planning. Prerequisite: HOD 2700 and 2720. [3]

2750. Managing Organizational Change. This course focuses on organizational development philosophy and practices of planned change, and the theory and techniques of organizational consulting. Students will participate in simulations and actual organizational development interventions. Prerequisite: HOD 2700 and 2720. [3]

2760. Creativity and Entrepreneurship. This course provides advanced students of organizations with an understanding of entrepreneurship by encouraging thinking "outside the box." It is designed to teach students how to create their own businesses, to live and work outside the "bureaucracy," to think creatively, to dream about new ideas and new ventures, and to appreciate the challenges to entrepreneurial thinking and acting. Prerequisite: HOD 2700 and 2720. [3]

2770. Leadership and Change in International Organizations. This course will serve as an introduction to issues of leadership in international organizations. The course will focus on human resource dimensions of organizational leadership generally, but with an emphasis on international organizations (public and private sector). The problem-based cases used in the course will expose students to issues facing American managers who are working in transnational and multinational organizations. Prerequisite: HOD 2700 and 2720. [3]

2780. Leadership and Organizational Effectiveness Seminar. Exploration of selected topics related to the leadership and organizational effectiveness track of the Human and Organizational Development Program. May be repeated for credit with change of topic. Prerequisite: HOD 2700 and 2720. [3]

2890. Ethics for Human Development Professionals. Normative evaluation of ethical issues in serving human need. Conflicting values within moral dilemmas will be examined from a variety of theoretical perspectives and practical criteria. Case studies of moral issues confronting the individual, the family, service organizations, and the general public will be reviewed. [3]

2900. Human Development Internship. An intensive work experience that involves working four days per week for one semester. Students will work in internship settings four days per week. The internship includes completion of a specific project for the organization. Corequisite: HOD 2910. [3–6]

2910. Advanced Seminar in Human and Organizational Development. Provides an opportunity to integrate human development theory, knowledge, and skills by applying them to the solution of problems in internship settings. Corequisite: HOD 2900. [3]

2920. Theoretical Applications of Human and Organizational Development. Students complete assignments and structured activities that demonstrate their ability to apply theories and skills acquired in seven Human Development Program core courses to understanding situations and solving problems that naturally occur during their internship experience. Must be taken in conjunction with the Human Development Program internship. Prerequisite: HOD 1000, 1020, 1100, 1200, 1400, 1410, 1700, 2100. [3]

2930. Senior Project. Students complete a specific project or assemble a portfolio that demonstrates their professional competence in their area of specialization. The portfolio includes written products and a videotape oral presentation on a topic appropriate to the student's area of specialization. [3]

2960. Senior Thesis. [3]

2980. Readings and Research for Undergraduates. Individual programs of reading or the conduct of research studies in human resources. Consent of faculty adviser required. May be repeated. [1–3]

Psychology and Human Development

1200. Minds, Brains, Contexts, and Cultures. An introduction to the cognitive studies major. Readings, lectures, and discussions are focused on thinking and understanding, especially as related to the brain, immediate context, and culture. These topics are considered from a variety of perspectives, including those taken from philosophy; literature; cognitive, social, and developmental psychology; sociology; psychiatry; and cultural anthropology. [3]

1300. Cognition and Instruction. The nature of human cognition, particularly the implications for the design and facilitation of the teaching and learning process. Major theories and research on thinking, learning, and cognitive development with illustrations of how they relate to teaching and the acquisition of expertise in content areas such as reading, mathematics, and science. Students will have an opportunity to explore innovative instructional technologies and the process of translating cognitive theory into instructional practice. [3]

1500. Cognitive Aspects of Human Development. Introduction to research and theory in cognitive development throughout the life span. Emphasis on early and middle childhood. Topics include development of language, memory, sensation and perception, problem solving, reading and writing, and logical-mathematical reasoning. Will consider applications of theory to developmental disorders and education. Prerequisite: PSY 1200 or 1630. [3]

1600. Psychology of Thinking. An in-depth exploration of theories and basic research concerning how young adults (i.e., college students) think, reason, and solve problems. Major topics include memory, categorization, reasoning, decision making, problem solving, and expertise. Includes one laboratory period per week [PSY 1601]. Prerequisite: one previous course in cognitive studies (i.e., PSY 1200, 1300, or 1500). Corequisite: PSY 1601. [4]

1601. Psychology of Thinking Lab. Corequisite: PSY 1600. [0]

1630. Developmental Psychology. An overview of human development emphasizing the period from conception through adolescence. Course content includes research methods as well as in-depth coverage of selected topics in cognitive, social, emotional, and physical development. [3]

1700. Social and Emotional Context of Cognition. An exploration of such social factors as the individual's values, beliefs, and emotions and their contributions to the basic cognitive processes involved in social perception, complex decision making, and problem solving. Topics include the social construction of perceived reality, attitude formation and change, heuristics and biases in social inference, and the role of emotion in coping and problem solving. [3]

1750. Social and Personality Development. An overview of basic concepts and current research in social and personality development. Specific topics include research methods, development of self, social cognition, achievement motivation, prosocial behavior, moral development, aggression, gender role development, family and cultural influences. Prerequisite: PSY 1630 or 1200. [3]

1800. Freshman Seminar in Cognitive Studies. Provides an overview of the major philosophical themes addressed in the cognitive studies major and introduces students to the variety of research activities in which current students are engaged. Open only to freshmen. [1]

2000. Language and Representational Systems. Intended to give students understanding of and appreciation for the roles that language and representational systems play in society. The roles look somewhat different depending on the disciplinary perspective that is adopted. Students are exposed to the particular issues and concerns about language and symbol systems that are the focus of different disciplines, such as psychology (cognitive, organizational, developmental, therapeutic) philosophy, linguistics, pedagogy (reading, writing), mathematics, and communications. Pre- or corequisite: PSY 1600. [3]

2100. Advanced Topical Seminar. An advanced seminar intended for juniors and seniors in which a particular topic within cognitive studies is considered in depth. Topics vary. May be repeated for credit. Prerequisite: PSY 1600. [3]

2101. Introduction to Statistical Analysis. Introductory course emphasizes selection, application, and interpretation of measures of relative frequency, location, dispersion, and association. Approaches to statistical inferences are emphasized. Prerequisite: proficiency in high school algebra. [3]

2102. Statistical Analysis. Second course in statistics for undergraduates. Multifactor analysis of variance designs (including repeated measures), and goodness of fit and contingency analyses. Prerequisite: PSY 2101. [3]

2230. Family, Career, and Gender. (Also listed as HOD 2230) Examines theory, research, and policy literature pertinent to family development, career development and intersections between the two, particularly as they are influenced by gender. Focus on child and adolescent socialization, family and career decision making, work commitment and values, parent-child relations, family role sharing and conflict, and workplace policies related to employees' career and family commitments. [3]

2250. Infancy. The behavior and physiological development of infants reflect a complex interaction between evolutionary history and genetics, prenatal environmental influences, and early post-natal experience. An overview of each of these topics is provided through classroom discussions and reading assignments focusing on recent empirical studies and major theoretical issues. Prerequisite: PSY 1630. [3]

2310. Educational Psychology. Applications of psychological theories and research to classroom settings. Cognitive development, problem solving and critical thinking, learning theories, motivation, social contexts, individual differences, classroom issues, evaluation issues. Prerequisite: PSY 1630 or PSY 101 or PSY 1200. [3]

2320. Adolescent Development. Examines theory, research, and other literature pertinent to the development and education of adolescents (ages 12–19). Specific topics include cognitive and social development; issues in identity, intimacy, autonomy, and sexuality; family-adolescent relationships; peer relationships; and school achievement and organization. [3]

2470. Introduction to Community Psychology. (Also listed as HOD 2470) Literature and research in community psychology. History of the specialty, theories of community, models of intervention, community research strategies, ethnopsychology, and community development. [3]

2510. Experimental Research Methods in Child Development. Focuses on how experimental methods are used to understand processes of child development. Through readings, class discussion, writing, and research experiences, the class considers excellent examples of classic and contemporary experimental studies of child development. Prerequisite: PSY 1630 or 1200.[3]

2520. Observational Research Methods. An introduction to the theoretical and methodical issues concerning observational/descriptive studies of behavior. Students conduct a research project using observational methods. Prerequisite: PSY 1630 or 1200. [3]

2530. Psychometric Methods. Covers the fundamental concepts of psychological measurement and testing, examines a sample of most important psychometric instruments in current use, provides observation of testing, and considers knowledge essential to making wise use of testing information in research and applied child development settings. Prerequisite: PSY 1630 or 1200. [3]

2600. Applied Child Development. Survey of major theories and research in child development from birth through adolescence. Emphasis on application of child development knowledge to practical situations (i.e., parenting, teaching, divorce, day care and preschool programs, children in hospitals). Prerequisite: PSY 1630. [3]

2610. Ethical and Moral Development. Examines research on the development of ethics and moral behavior in children and youth. Current theoretical approaches will be discussed as well as the role of the family, peers, church, and school. Prerequisite: PSY 1630 or PSY 101. [3]

2690. Special Topics in Psychology. Advanced exploration of a psychological orientation to current issues. May be repeated. [1–4]

2691. Developmental Neuroscience. (Also listed as A&S PSY 269a) An introduction to normal brain development with examples of abnormal development. Topics include cell division, migration, cell death, synapse formation, plasticity, and developmental disability syndromes. Prerequisite: PSY 233 for undergraduates; instructor's permission for graduate students. [3]

2692. Developmental Psychobiology. (Also listed as A&S PSY 269b) Description, causes, and consequences of disorders in neurobehavioral development. Basic concepts of psychology and neuroscience are used to explore the nature of developmental disabilities, their prevention, and management of disabling conditions. [3]

2810. Practicum in Child Development. The course offers students opportunities to observe and interact with children in community settings (e.g., preschool and day care programs). Students engage in systematic observation of child behavior, regular discussions about observations with the course instructor, and weekly course meetings focused on relating observations to theoretical and empirical readings. Prerequisite: PSY 1630 and at least two other courses in Child Development; permission of instructor. [2-3]

2820. Field Work in Psychology for Undergraduates. Offered to provide field experience appropriate to the student's interests. Open only to students majoring in psychology. May be repeated. Consent of instructor required. [1-3]

2890. Ethics for Human Development Professionals. (Also listed as HOD 2890) Normative evaluation of ethical issues in serving human needs. Conflicting values within moral dilemmas will be examined from a variety of theoretical perspectives and practical criteria. Case studies of moral issues confronting the individual, the family, service organizations, and the general public. [3]

2901. Research Seminar. The student learns about scientific research methods and proposes and writes a thesis addressing a particular issue within cognitive studies. The course is devoted to selecting a topic, proposing a suitable thesis study, conducting the study, and writing the final thesis. May be taken in conjunction with PSY 2980 (Independent Study). This course is normally taken in spring of the junior year. Participants in the Honors Program take a special section of this course in fall of the junior year. In this special section, Honors majors design and propose their Honors Thesis projects, which they then conduct and write up during subsequent semesters. Prerequisite: PSY 1600 or 1630. [3]

Special Education

1000. Practicum: Observation. Field experience with discussion of a variety of special education programs and teaching strategies. Classroom observations which focus on a wide range of disabilities and service delivery models. Required for special education majors. [1]

1010. Introduction to Exceptionality. Examines issues and trends in special education and overviews the characteristics of persons with disabilities. Essential issues and theories relating to special education and the development of exceptional persons with special attention to normal and atypical human development. Multi-cultural, humanistic, and legal issues are addressed. [3]

2010. Introduction to Instructional Models. An overview of instructional models that can be used with difficult-to-teach and disabled students. Emphasis is placed on instructional models that have empirical support for their effectiveness, facilitate continuous monitoring

of student progress, and are amenable to the use of technology. Prerequisite: SPED 1010, 1011, consent of instructor. [3]

2020. Family Intervention. An overview of different approaches, current issues, and problems involved in working with and supporting families. Emphasis is placed on how a child with disabilities affects and is affected by parents, siblings, the extended family, and the community. Strategies for effective communication for the purpose of information sharing and collaborative planning with families are provided. [3]

2030. Introduction to Language and Communication. (Also listed as ENED 2030) Overview of normal language development, psycholinguistic terminology and research, speech and language disorders and their remediation, and specific intervention procedures for the development of speech and language skills in children and youth. [3]

2110. Managing Academic and Social Behavior. This course is designed to prepare students to manage classroom behavior using behavioral principles. Definition and measurement of behavior, reinforcement strategies, systematic program development, basic formats for classroom instruction, and techniques for monitoring student progress are presented. Emphasizes procedures for increasing academic and socially appropriate behavior through classroom activities. Students apply their skills in classroom settings. Prerequisite: SPED 1010. Corequisite: 1 hour of SPED 2111. [3]

2111. Practicum: Management. Application of behavioral principles to classroom strategies. Planning, implementing, and evaluating instructional procedures for academic and social behavior. Corequisite: SPED 2110. [1]

2300. Introduction to Students with Severe Disabilities. Provides information on the nature and needs of individuals with severe/profound disabilities and the roles of federal, state, and local agencies in providing services to this population. Emphasis is placed on strategies for the acquisition and generalized use of age appropriate functional skills in natural community-based settings. Methods for developing and implementing individualized programming across specialized curricular areas such as communicative, cognitive, functional academic, motor, domestic living/self-help, recreation/leisure, vocational and general community living skills. [3]

2301. Practicum: Procedures for Students with Severe Disabilities. Field-based application of correlated course content to assessing, planning, implementing, and evaluating instructional procedures for students with severe disabilities. Corequisite: SPED 2300. [1]

2330. Procedures for Students with Multiple Disabilities. Overview of the causes, treatment, education, and management of individuals with multiple disabilities; including neurological impairments resulting in physical disabilities, sensory impairments, and the combination of these. Emphasis is placed on environmental adaptations and direct training needed to maximize independence as determined through systematic ecological inventories for individual students. Information is provided on physical and medical management of these students in educational settings. Corequisite: SPED 2331. [3]

2331. Practicum: Multiple Disabilities. Field-based application of correlated course content to placement of students with multiple disabilities. Adaptations and direct procedures of assessing, planning, implementing, and evaluating instructional procedures for students with multiple disabilities. Corequisite: SPED 2330. [1]

2340. Procedures in Transition to Adult Life. Overview of history, legislation, and practice in the areas of community and employment integration for persons with disabilities. Emphasis on various strategies for promoting a successful transition from school to life. Students are required to develop instructional plans for integration within the community. Students will apply their skills in community or classroom settings. Prerequisite: SPED 2110. Corequisite: SPED 2341. [3]

2341. Practicum: Transition to Adult Life. Field-based application of correlated course content to instructional strategies. Assessing, planning, implementing, and evaluating instructional procedures for community and employment integration. Corequisite: SPED 2340. [1]

2400. Early Education for Children with Disabilities. Overview of issues related to early intervention for preschool-aged children with disabilities; typical and atypical development in the preschool years; methods of designing individualized, functional instruction appropriate for a range of service delivery options; consultation models for early intervention; and transitions to next environment. Corequisite: SPED 2401. [3]

2401. Practicum: Early Education for Children with Disabilities. Field-based application of correlated course content to classroom strategies. Assessing, planning, implementing, and evaluating instructional procedures for young children with disabilities. Corequisite: SPED 2400. [1]

2410. Early Intervention for Infants with Disabilities. Typical and atypical development in infancy; methods for designing individualized family service plans; method of service coordination; strategies for working with team members from other disciplines; program evaluation. [3]

2420. Assessment Procedures for Young Children. Overview of measurement, theory, and practice in the assessment of early developmental problems. Course will address strategies for selecting appropriate and valid instruments and methods for the purpose of initial screening, evaluation to determine eligibility for services, and assessment to support program planning for infants, toddlers, and young children. Interpretation and synthesis of evaluation and assessment information for dissemination to families and other professionals is demonstrated. Students apply skills in early intervention, preschool, and/or early childhood education settings. Corequisite: SPED 2421. [3]

2421. Practicum: Assessment Procedures for Young Children. Field-based application of correlated course content of assessment strategies. Experience in conducting screening and comprehensive developmental assessments in early intervention, preschool, and/or early childhood education settings. Corequisite: SPED 2420. [1]

2500. Sensory Perception, Anatomy, Physiology, and Hygiene of Eye. Medical lectures and laboratory demonstrations by an ophthalmologist, with educational implications presented by an educator. Demonstrations and practice in vision screening. Guided observations in clinics and educational settings. Visual perception and perceptual development. [3]

2510. Educational Procedures for Students with Visual Impairment. Introduction to the literature, history, principles, programs, practices, and problems in the field. Administration, curricular, and methodological adaptations for various educational programs. The education of individuals with visual impairment and other accompanying disabilities. [3]

2530. Braille Reading and Writing. Basic communication skills for individuals with visual impairment. Basic mastery of braille for teaching. [2]

2540. Communication Skills for Students with Visual Impairment. Emphasis on research on methods of teaching communication skills and communication technology. Preparation of materials for the visually impaired. Prerequisite: working knowledge of braille. Consent of instructor required. [3]

2550. Orientation and Mobility for Teachers of the Visually Impaired. Lectures, discussions, and simulated activities in teaching orientation, mobility concepts, and skills to visually impaired individuals. Offered by a mobility specialist. [3]

2600. Audiology in Education. Introduction to the current issues and trends concerning the role of the audiologist in the public school setting. Review of the anatomy and physiology

of the ear and common pathologies. Emphasis on early identification and intervention, inservice education, amplification, and the roles of federal, state, and local agencies in providing services to the learning-disabled, hearing-impaired students. [3]

2601. Laboratory: Audiology in Education. Demonstration and hands-on experience with personal and classroom amplification systems. Operation and troubleshooting of amplification systems commonly used in a classroom setting. Specifically, hearing aids, FM systems, assistive listening devices, vibrotactile devices, and cochlear implant will be demonstrated. Co- or prerequisite: 2600. [1]

2610. Speech Development and Improvement for Children with Hearing Impairment. Anatomy, physiology, and acoustic features of speech, normal development of speech sound production, phonological processes, and system of orthography of speech sounds. Acquisition of basic speech teaching skills for development of effective oral communication in children with hearing impairment (Ling's Seven-Stage Model, speech reading, and auditory enhancement techniques). [3]

2620. Language and Literacy in the Deaf or Hard of Hearing Child. Maximizing the language and literacy development of the child with mild to profound hearing loss. Language, reading, and writing assessment and intervention methods. Co- or prerequisite: 2030. [3]

2621. Practicum: Language and Speech Development of Children with Hearing Impairment. Assessment, planning, and implementing procedures for speech and language acquisition for children with hearing impairment. Application of theoretical concepts to classroom strategies. [1]

2630. Educational Programming for Children with Hearing Impairment. Instructional methods and strategies for adapting classroom learning environments for children with hearing impairment. Behavior management, auditory management, curriculum assessment, and lesson planning. [3]

2631. Practicum: Educational Programming for Children with Hearing Impairment. Application of theoretical information on classroom management, planning, and instruction, including academic curricula, amplification use, environmental assessment, and communication facilitation within a classroom setting. [1]

2640. Manual Communication (Beginning). Develops minimum competence in manual communication modes, both finger spelling and signing. Preservice experience for majors in special education who intend to work with hearing-impaired and disabled populations with major communication problems. Laboratory experience included. [3]

2650. Advanced Manual Communication. Second course in manual communication which includes sign vocabulary, grammatical structures, and idioms of American Sign Language. A comparative study of the use of signs in English order is included. Provides opportunities to become fluent signer of both English and American Sign Language. Prerequisite: SPED 2640. [3]

2690. Special Topics in Special Education. Study of selected topics or issues related to special education such as teaching culturally or linguistically diverse learners, accommodating academic diversity in classrooms, or augmentative communication techniques. [3]

2810. Assessment Strategies for Students with Disabilities. Overview of educational measurement, theory, and practice in the assessment of learning problems. Assessment and monitoring of student progress using both standardized and non-standardized instruments. Interpretation and incorporation of curriculum-based assessment methodology for the development of instructional programs is required. Synthesis of assessment data for dissemination to professionals and parents is demonstrated. Students apply skills in

classroom settings. Prerequisite: SPED 1010 and PSY 2310 or 2320. Corequisite: 1 hour of SPED 2811. [3]

2811. Practicum: Assessment Strategies for Students with Disabilities. Experience in measuring student performance in classroom settings. Prerequisite: SPED 1010, 1011, 2010, consent of instructor. Corequisite: SPED 2810. [1]

2820. Instructional Procedures Mild/Moderate Disabilities. Emphasis on assessment, teaching, monitoring, and evaluation of individual educational programs within group instructional settings. Focuses on explicit teaching procedures, direct instruction, and instructional design principles that apply to a range of academic domains. Prerequisite: SPED 1010, 2010, 2110, 2810, 2820. Corequisite: SPED 2831. [3]

2821. Practicum: Instructional Procedures. Field-based application of correlated course content to assessing, planning, implementing, and evaluating instructional procedures for procedures which integrate individualized educational plans in group instructional environments. Corequisite: SPED 2830. [1]

2830. Advanced Instructional Procedures Mild/Moderate Disabilities. Presents empirically validated instructional procedures to address the academic deficits of students with disabilities. Integration of explicit teaching procedures, direct instruction, and instructional design principles that apply to a range of academic domains. Proficiency in the development of assessment profiles, instructional lessons, monitoring of progress through curriculum-based measures and data-based decision making is required. Students will apply their skills in classroom settings. Prerequisite: SPED 1010, 2010, 2110, 2810. Corequisite: 1 hour of SPED 2821. [3]

2831. Practicum: Advanced Instructional Procedures. Field-based application of correlated course content to classroom strategies. Planning, implementation, and evaluating instructional procedures for students with mild to moderate disabilities. Corequisite: SPED 2820. [1]

2870. Accommodating Diversity in the Classroom. Explores the importance and difficulty of teaching heterogeneously grouped students in mainstream classrooms and offers specific instructional strategies for doing so effectively. Focuses explicitly and exclusively on methods to help classroom teachers instruct and manage the behavior of a broad range of students—students with and without disabilities at multiple points along the achievement continuum. [3]

2900. Professional Seminar. Students complete assignments and structured activities that demonstrate their ability to apply theories and skills acquired during the core courses of the exceptional learning major. Emphasis is placed on understanding situations and solving problems that naturally occur during the student teaching experience. Students assemble a portfolio that demonstrates their professional competence in their area of specialization. Must be taken during the student teaching semester. Corequisite: SPED 2901, 2911. [3]

2901. Student Teaching in Special Education and Education. (Also listed as EDUC2704) Observation, participation, and classroom teaching for undergraduate students in any area of education combined with any area of exceptionality. Placements are dependent on license and endorsement areas. Prerequisite: Admission to student teaching. Corequisite: SPED 2900. [9–10] (*Pass/Fail grade*)

2911. Student Teaching in Special Education. Observation, participation, and classroom teaching for undergraduate students in any area of exceptionality. Placements are dependent on license areas. Prerequisite: Admission to student teaching. Corequisite: SPED 2900. [9–10] (*Pass/Fail grade*)

2960. Individual Study in Special Education. Semi-independent study of selected topics in special education. May be repeated. Consent of instructor required. [1–3]

Teaching and Learning

Education

1020. Society, the School, and the Teacher. Introduces the relationship between society's goals and those of the school. Studies the community setting and the school, the social, political, and instructional organization of a school, and the roles and values of a teacher. Field experience. [3]

2010. Health and Well Being of School-Age Children. Provides information to increase understanding of the biological, social, emotional, and environmental factors that promote wellness in school-age children. Addresses the important health issues facing children. Students will acquire effective teaching strategies for health education. Students must present to the instructor current Red Cross certificates for first aid and CPR no later than the last class meeting of the semester. (Contact a Red Cross facility for times and fees of first aid and CPR courses.) [1]

2040. Introduction to Classroom Technologies. An introduction to various technologies used in classrooms with emphasis on microcomputer-based systems. Meets licensure requirements for preservice teachers. [1]

2115. Language and Literacy Learning in Young Children. Examines sociocultural and cognitive theories of language learning, theoretical models of the reading and writing processes, and interconnections between reading, writing, speaking, listening, and alternate communications systems such as art, drama, and dramatic play. Emphasizes patterns of reading and writing for children from birth to age 8 and relates these to features of learning environments. Observation and assessment strategies are introduced. Corequisite: EDUC 2116 and EDUC 2117 [3]

2116. Practicum in Teaching Early Childhood Reading and Language Arts. Field experiences in a variety of early childhood centers or classroom settings designed to provide practical experience and reflection on the teaching of reading and the language arts. Corequisite: EDUC 2115 and EDUC 2117. [1]

2117. Methods of Language and Literacy Instruction in Early Childhood. This course introduces methods for structuring classrooms to teach and assess reading, writing, speaking, and listening as part of an integrated language arts program for children from birth through grade 4, with special emphasis on children from birth to age 8. Corequisite: EDUC 2115 and EDUC 2116 [3]

2120. Parents and Their Developing Children. Examines the needs and characteristics of young children, birth through age eight, and the needs of parents and ways that parents can address their children's needs. Emphasis on parental involvement and strategies for working with parents in educational settings. [3]

2130. Curriculum Programming: Birth–Age 3. Focus on programs for and the teaching of infants and toddlers. Students will learn how to support the physical, social, emotional, language, and cognitive development of infants and toddlers in out of home settings and to understand individual differences in development and to support those differences through

appropriate planning. A 20-hour practicum enables students to interact with very young children in a group environment. [3]

2140. Curriculum Programming: Ages 3–Kindergarten. Students become familiar with a variety of program models for young children and engage in curriculum development and instructional planning for young children with a variety of developmental needs. Focus is on preschool education and transition to formal school schooling. A 20-hour practicum enables students to interact with very preschool children in a group environment. [3]

2150. Mathematics, Science, and Social Studies Instruction in Early Grades. This course is designed to prepare prospective early childhood teachers to provide instruction in mathematics, science, and social studies. The course builds on the core content courses in mathematics and science in the early childhood program as well as the curriculum courses for ages 0-3 and age 3-kindergarten. Corequisite: EDUC 2151 [5]

2151. Practicum in Mathematics, Science, and Social Studies Instruction in Early Grades. Field experiences in an early grades classroom are designed to provide practical experience and reflection on the teaching of mathematics, science, and social studies. Corequisite: EDUC 2150 [1]

2160. Practicum in Early Childhood Education Sciences. Field experiences in a variety of early childhood centers or classroom settings designed to provide practical experience and reflection on the teaching of mathematics, science, and social studies. Corequisite: MTED 2160, SCED 2160, and SSED 2160. [1]

2170. Literacy and Mathematics Instruction for Diverse Young Learners. This course is designed to prepare prospective early childhood teachers to provide literacy and mathematics instruction that addresses the needs of diverse learners, particularly those in preschool through second grade. The course builds on EDUC 2130, EDUC 2140, and EDUC 2150 and is intended to provide a more in-depth study of appropriate instruction for individual students' particular needs than do those courses. [3]

2210. Practicum in Elementary Education. Field experiences in a variety of school, grade level, and instructional settings, designed to integrate and apply teaching skills developed in the elementary social studies methods course. Corequisite: SSED 2210. [1]

2215. Theory and Methods of Reading Instruction in Elementary Schools. Examines approaches, strategies, and methods for teaching reading in elementary classrooms. Discusses underlying concepts and theories pertaining to literacy instruction and relates these to classroom practice. Although grounded in the philosophy that reading and writing are not discrete entities, the course focuses on reading. Corequisite: EDUC 2217 and EDUC 2216. [3]

2216. Practicum in Teaching Elementary Reading and Language Arts. Field experiences in a variety of elementary classroom settings designed to provide practical experience and reflection on the teaching of reading and the language arts. Corequisite: EDUC 2215 and EDUC 2217. [1]

2217. Language Arts in Elementary Schools. The nature of language development in the elementary school years, and principles and practices for teaching the English language arts. Corequisite: EDUC 2215 and EDUC 2216. [3]

2250. Practicum in Elementary Sciences. Field experiences providing students an opportunity to integrate and apply teaching skills developed in the elementary mathematics, science, and social studies methods courses. Students are placed in a local elementary school classroom and are given opportunities to engage in classroom observations, curriculum planning and implementation, and guided reflective practice. Corequisite: MTED 2250, SCED 2250, and SSED 2210. [1]

2270. Managing Instructional Settings. Examines several planning and management philosophies and a variety of practices for use with early childhood and/or elementary school students. [2]

2290. Student Teaching Seminar: Elementary. Seminar to accompany EDUC 2701. [3]

2291. Student Teaching Seminar: Early Childhood. Seminar to accompany EDUC 2702. [3]

2292. Student Teaching Seminar: Secondary. Seminar to accompany EDUC 2703. [3]

2310. Teaching in Secondary Schools. Exploration of general skills and principles of teaching and learning in secondary schools, including curriculum organization and patterns, teaching methods, and professionalism of the secondary school teacher. A practicum in secondary schools is included. [3]

2320. Teaching for Understanding and Academic Literacy. Designed to assist secondary content teachers in developing multiple teaching strategies, including use of technology, to enhance students' learning opportunities in diverse classrooms. Includes an emphasis on all teachers as teachers of reading and writing. Pre- or corequisite: EDUC 2040 [2]

2330. Practicum in Secondary Education. Observation, participation, and teaching in a secondary school setting. Corequisite: A secondary methods course. [1]

2340. Practicum in Secondary Education I. Field experience in middle and secondary school settings. Designed for secondary education majors in their sophomore year. [1]

2350. Practicum in Secondary Education II. Field experience in middle and secondary school settings. Designed for secondary education majors in their junior year. [1]

2360. Practicum in Secondary Education III. Observation, participation, and teaching in middle and secondary school settings. Corequisite: a secondary methods course. [1]

2430. Addressing Problems in Literacy Learning. An analysis of multiple factors contributing to literacy problems students experience, and philosophies and principles of instructional practice designed to individualize instruction and support literacy development. Provides teaching experience within a school setting. Prerequisite: EDUC 2115, 2215, or equivalent. [3]

2450. Reading in Secondary Schools. (Also listed as ENED 2450) Survey of diagnostic instruments, reading skills, materials, and methods of teaching reading and study skills in content areas. [3-4]

2600. Curriculum Foundations and Design. An introduction to theoretical and practical dimensions of curriculum thought and development. Exploration and critical analysis of some of the major ways in which educational programs have been conceptualized, with special attention to basic assumptions about the purposes of education and the nature of knowledge and learning; students will trace the evolution and echoes of these conceptions of the curriculum within the context of American education in the twentieth century. [3]

2690. Special Topics in Education. Exploration of special issues on topics related to education. May be repeated for credit with change of topic. [1-3]

2701. Student Teaching in the Elementary School. Observation and teaching experience in elementary schools. Undergraduate credit only. Prerequisite: admission to student teaching. [8]

2702. Student Teaching in Early Childhood. Observation and teaching experience for students seeking PreK-3 licensure. Undergraduate credit only. Prerequisite: admission to student teaching. [4-9]

2703. Student Teaching in the Secondary School. Observation and teaching experience in secondary schools. Undergraduate credit only. Prerequisite: admission to student teaching. [4-9]

2704. Student Teaching in Education and Special Education. (Also listed as SPED 2901) Observation, participation, and classroom teaching for undergraduate students in any area of education combined with any area of exceptionality. Placements are dependent on license and endorsement areas. Prerequisite: Admission to student teaching. [9]

2800. Culture, Cognition, and Technology. Uses principles from cognitive science and cultural theory to design learning environments and materials with emphasis on using technologies to make tacit cultural values and practices explicit. [3]

2920. Social and Philosophical Aspects of Education. Exploration of the interaction between contemporary social problems and various philosophies in relation to educational theory, policy, and practice. [3]

2960. Individual Study in Education. Semi-independent study on selected topics in education. Consent of instructor required. May be repeated. [1-3]

English Education

2000. Exploring Literature for Children. Explores characteristics of good literature for children ages birth to 12, authors and illustrators of the genre, and issues in the area of children's literature. [3]

2280. Language Study in the Elementary and Secondary Classroom. Investigates various methods of approaching grammar, usage, semantics, and bi-dialectism in the English classroom. [3]

2350. Teaching English in the Secondary School. Principles of teaching applied to language and literature in secondary schools. Required for secondary school licensure in English. Prerequisite: EDUC 2310 or consent of instructor. Corequisite: EDUC 2360. [3]

2400. Seminar in English Education. Explores methods of teaching the English language arts in secondary schools with an emphasis on student assessment, reflective practice, and teaching the English language arts to diverse classroom population. [3]

2450. Reading in Secondary Schools. (Also listed as EDUC 2450) Survey of diagnostic instruments, reading skills, materials, and methods of teaching reading and study skills in content areas. [3-4]

2690. Special Topics in English Education. Exploration of special topics related to English education. May be repeated with change of topics. [3]

2920. Literature for Adolescents. Examines a wide range of literary works appropriate to readers of middle school and high school age. Materials for readers of varying abilities. [3]

2960. Individual Study in English Education. Semi-independent study on selected topics in English education. Consent of supervising instructor required. May be repeated. [1-3]

Foreign Language Education

2380. Teaching Foreign Language in Secondary Schools. Fundamentals of language learning and techniques of teaching foreign language in the secondary school. Required for secondary school licensure in a foreign language. Prerequisite: EDUC 2310 or consent of instructor. Corequisite: EDUC 2360. [3]

2690. Special Topics in Foreign Language Education. Exploration of special issues or topics related to foreign language education. May be repeated for credit. [1–3]

2960. Individual Study in Foreign Language Education. Semi-independent study on selected topics in foreign language education. May be repeated. Consent of instructor required. [1–3]

Humanities Education

2060. Creative Arts for Young Children. Explores the impact of instruction in visual arts, music, and movement on the aesthetic, intellectual, and creative growth of young children. [3] (Not currently offered)

2250. Introduction to Arts Education. Acquaints the student with the philosophical and pedagogical base with which to develop competence in teaching the arts. [2]

2690. Special Topics in Humanities Education. Explores special topics related to humanities education. May be repeated. [1–3]

2960. Individual Study in Humanities Education. Semi-independent study on selected topics in humanities education. May be repeated. Consent of faculty supervisor required. [1–3]

Mathematics Education

2100. Young Children's Mathematical Thinking and Learning. The focus of the course is on ways in which young children develop increasingly sophisticated additive structures, including pre-number and early number concepts, place value, strategies for single- and double-digit computation, and measurement. Children's mathematical thinking and learning as well as ways to support that learning are investigated. This course is prerequisite to or corequisite with EDUC 2150. This course is not recommended for freshmen. [3]

2160. Teaching Mathematics for Young Children. This course is the second in a sequence of courses designed for those students who wish to become licensed to teach grades pre-K through four. The course deals with issues of both content and pedagogy that are relevant to these grades. Corequisites: SCED 2160, SSED 2160, and one credit of EDUC 2160. Prerequisite: MTED 2100. [2]

2200. Mathematics for Elementary Teachers. This course is for students seeking elementary school licensure with an emphasis on grades two through six. This course will cover issues of both content and pedagogy that are relevant to these grades. Not recommended for freshmen. This course is prerequisite to MTED 2250. [3]

2250. Teaching Mathematics in Elementary Schools. This course is the second in a sequence of courses designed for those students seeking elementary licensure with an emphasis on grades two through six. This course deals with issues of both content and pedagogy that are relevant to these grades. Corequisites: SCED 2250, SSED 2210, and one credit of EDUC 2250. Prerequisite: MTED 2200. [2]

2360. Teaching Mathematics in Secondary Schools. Study of conceptual structure, curriculum, objectives, instructional approaches, materials, learning theory, and philosophies of assessment as they relate to teaching mathematics in middle and secondary schools. Prerequisite: EDUC 2310 or consent of instructor. Corequisite: EDUC 2360. [3]

2690. Special Topics in Mathematics Education. Exploration of special topics related to mathematics education. May be repeated. [1–3]

2960. Individual Study in Mathematics Education. Semi-independent study on selected topics in mathematics education. May be repeated. Consent of supervising instructor. [1–3]

Science Education

2160. Teaching Science for Young Children. Instructional approaches and materials for teaching science in preschool, kindergarten, and primary settings. Emphasis on learning and child development, curriculum approaches, nature of science, design of materials, and instructional strategies. Corequisite: MTED 2160, SSED 2160, and one credit of EDUC 2160. [2]

2200. Science for Elementary Teachers. This course is designed to examine the relationship between science, technology, and society. Emphasis will be on relating science concepts to real world applications, to societal influences and the changing nature of science. The role of inquiry in science will be examined and experienced. A knowledge of introductory earth, biological, and physical science is presumed and will be utilized to present of view of science as an integrated discipline. [3]

2250. Teaching Science in Elementary Schools. Study of the nature of science, discovery (inquiry) teaching and learning, curriculum approaches, goals and standards, trends, instructional and assessment strategies, and resources and materials for teaching science in grades 1-8, with emphasis on grades 2-6. Corequisite: MTED 2250, SSED 2210, and EDUC 2250. [2]

2370. Teaching Science in Secondary Schools. Study of instructional approaches, materials, curriculum resources, trends, inquiry teaching and learning, for teaching in secondary schools. Required for secondary school licensure in the sciences. Prerequisite: EDUC 2310 or consent of instructor. Corequisite: EDUC 2360. [3]

2380. Laboratory in Secondary Science Education. Laboratory Experience in secondary science, microteaching, and examination of secondary science materials. Corequisite: 2370 or 3370. [1]

2690. Special Topics in Science Education. Exploration of a special topic related to science education. May be repeated. [1–3]

2960. Individual Study in Science Education. Semi-independent study on selected topics in science education. May be repeated. Consent of supervising instructor required. [1–3]

Social Studies Education

2100. Scientific and Historical Reasoning in Young Children. This course focuses on issues of the development of subject matter reasoning and understanding in young children. The course will examine the interplay between informal and formal experiences that influence the development of scientific and historical reasoning as children transition from their intuitive theories to a more formal study of subject matter disciplines. [3]

2160. Teaching Social Studies for Young Children. Curriculum and instruction in social studies for preschool, kindergarten, and primary children. Knowledge of child development applied to designing of learning experiences and implementation of teaching strategies. Corequisite: MTED 2160, SCED 2160,

2210. Teaching Social Studies in Elementary Schools. Study of conceptual structure of social studies curricula with emphasis on curricular objectives, instructional approaches, teaching materials, and evaluative strategies focusing on teaching social studies in grades 1-8, with emphasis on grades 2-6. Corequisite: MTED 2250, SCED 2250, and EDUC 2250. [2]

2390. Teaching Social Studies in Secondary Schools. Instructional principles and techniques of teaching social studies. Required of students seeking secondary school licensure in social studies, a social science field, or history. Prerequisite: EDUC 2310 or consent of instructor. Corequisite: EDUC 2360. [3]

2690. Special Topics in Social Studies Education. Exploration of special topics related to social studies education. May be repeated. [1–3]

2960. Individual Study in Social Studies Education. Semi-independent study on selected topics in social studies education. May be repeated. Consent of supervising instructor required. [1–3]

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- LEONARD P. ALBERSTADT, Associate Professor of Geology and Chair of the Department
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B.S. (Ohio State 1955); Ph.D. (California, Berkeley 1960) [1961]
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M.S. (Swiss Federal Institute of Technology 1982); Ph.D. (Carnegie-Mellon 1987) [1997]
- PAUL R. ALGOSO, Naval Instructor
B.S. (U.S. Naval Academy 1994) [1999]
- RUBIN R. ALIEV, Research Assistant Professor of Physics
M.Sc. (Moscow Physio-Technical Institute 1988); Ph.D. (Institute of Theoretical Experiments in Biophysics [Russia] 1994) [1999]
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CRAIG NIES and ROLAND SCHNELLER, Keyboard Co-Chairs
KATHRYN PLUMMER, Strings
JONATHAN A. RETZLAFF, Voice
WILLIAM G. WIGGINS, Brass and Percussion

Faculty Coordinators

ELIZABETH CORMIER, Certificate Program; Group Piano
JOHN KOCHANOWSKI, String Chamber Music
CASSANDRA LEE, Woodwind Chamber Music
MAUREEN NEEDHAM, CRYSTAL PLOHMAN, and PAMELA SCHNELLER, Music Minors
DWAYNE SAGEN, Ensembles; Musical Arts/Teacher Education Program
ROLAND SCHNELLER, Pre-College Scholarships
CAROL F. SMITH, Suzuki Program
CARL F. SMITH, JR., Music as a Second Major

Committees of the School

ADMISSIONS. Dwayne Sagen, Chair. Lawrence Borden, Cornelia Heard, Jane Kirchner, Karen Ann Krieger, Craig Nies, Joe Rea Phillips, Gayle Shay, Michael Slayton, Bobby G. Taylor.

AWARDS. John Johns, Chair. Robin P. Fountain, John Kochanowski, Karen Ann Krieger.

BMI COMPOSER-IN-RESIDENCE. Craig Nies, Chair. Emelyne Bingham, Michael Kurek, Joe Rea Phillips, Melissa Rose.

BUILDING ADDITION. Michael Kurek, Chair. Robin P. Fountain, Jane Kirchner, Joe Rea Phillips, Roland Schneller, Gayle Shay.

CERTIFICATE PROGRAM COUNCIL. Elizabeth Cormier, Chair. Cynthia Estill, Amy Jarman, Joe Rea Phillips, Kathryn Plummer, Roland Schneller, William G. Wiggins.

CONCERTO COMPETITION. Melissa Rose, Chair. Lawrence Borden, Amy Dorfman, Cassandra Lee.

CONCERTS. Amy Dorfman, Chair. Debra Creasman, Cynthia Estill, Robin P. Fountain, Amy Jarman, John Johns, Cassandra Lee, Kathryn Plummer, Melissa Rose, Gayle Shay, Robert P. Thompson.

CURRICULUM. Dale Cockrell, Chair. Cornelia Heard, Jane Kirchner, Jonathan Retzlaff.

DEPARTMENT CHAIRS. Mark Wait, Chair. Dale Cockrell, Cynthia Estill, John Johns, Michael Kurek, Craig Nies, Kathryn Plummer, Jonathan Retzlaff, Roland Schneller, William G. Wiggins.

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FACULTY APPOINTMENTS DOCUMENT/TENURE QUESTION (ad hoc). Christian Teal, Chair. Robin P. Fountain, John Johns, Michael Kurek, Douglas Lee, Craig Nies, Kathryn Plummer.

FACULTY REVIEW. Christian Teal, Chair. Robin P. Fountain, John Johns, Enid Katahn, Craig Nies.

FACULTY/STAFF CAMPAIGN. Joe Rea Phillips, Coordinator.

MARTIN WILLIAMS AWARD. Melanie Lowe, Chair. Maureen Needham, Stan B. Link.

M.Ed. OVERSIGHT. Dwayne Sagen, Chair. Emelyne Bingham, Frank Kirchner, Jane Kirchner, Jonathan Retzlaff.

MUSIC LIBRARY. Melanie Lowe, Chair. Dale Cockrell, Maureen Needham, Carol F. Smith, William G. Wiggins.

PRE-COLLEGE PROGRAM. William G. Wiggins, Chair. Elizabeth Cormier, Cassandra Lee, Carol Nies, Roland Schneller, Celeste Tuten, Anne Hall Williams.

TECHNOLOGY. Michael Hime, Chair. Emelyne Bingham, Lawrence Borden, Cynthia Cyrus, Kathryn Plummer.

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SUSAN GREEN, M.M.

BETTY POLK, B.M.
MELISSA ROSE, D.M.A.
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MISHA STEFANUK, B.A.

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LEON PLANTINGA, Professor of the History of Music, Yale University, New Haven,
Connecticut
DAVID POCOCK, Artistic Director, American Pianists' Association, Indianapolis, Indiana
PETER TAKACS, Professor of Piano, Oberlin Conservatory of Music
ROBERT WERNER, Dean, College of Music, University of Cincinnati

B

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JEAN KELLER HEARD
JIM ED NORMAN

JOHN F. "DEL" SAWYER
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DAVID K. WILSON
JUSTIN P. WILSON

Faculty

- BEEGIE ADAIR, Adjunct Lecturer in Jazz Improvisation
B.S. (Western Kentucky 1958) [1993]
- KWAMI AHIMA, Adjunct Instructor of African Music
[2000]
- SALLY RHODES AHNER, Adjunct Assistant Professor of Voice
B.A. (Salem [North Carolina] 1970); M.A. (Eastman 1974) [1987]
- DENISE BAKER, Adjunct Artist Teacher of Violin
B.M., M.M. (North Carolina School of the Arts 1992, 1995) [1997]
- JEROME (BUTCH) BALDASSARI, Adjunct Associate Professor of Mandolin
[1996]
- MARTHA BARTLES, Adjunct Senior Artist Teacher of Piano
B.M. (Mississippi 1953); M.F.A. (Ohio University 1954) [1997]
- GREGORY BARZ, Assistant Professor of Musicology (Ethnomusicology)
B.A. (North Carolina School of the Arts 1982); M.A. (Chicago 1992); Ph.D. (Brown 1997)
[1998]
- EMELYNE M. BINGHAM, Senior Lecturer in Aural Studies and Conducting
B.S. (Tennessee Technological 1983); M.M. (Indiana 1986) [1986]
- LAWRENCE BORDEN, Assistant Professor of Trombone
B.M. (Northwestern 1982) [1988]
- POLLY PURCELL BRECHT, Adjunct Instructor in Harpsichord
B.M., M.M. (Indiana 1979, 1980); D.M. (Florida State 1986) [1996]
- DAVID CHILDS, Assistant Professor of Choral Studies; Director of the Vanderbilt
Symphonic Choir
B.M. (Canterbury [New Zealand] 1991; M.M. (Florida State 1995) [2000]
- DALE COCKRELL, Professor of Musicology and Chair of the Music Literature/History
Department; Professor of American and Southern Studies
B.M., M.M., Ph.D. (Illinois 1971, 1973, 1978) [1996]
- ELIZABETH CORMIER, Senior Artist Teacher of Piano; Coordinator of Group Piano;
Coordinator of the Certificate Program
A.B. (Smith 1947); B.M. (New England Conservatory 1950); M.A. (Columbia 1955)
[1967]
- ALLAN COX, Professor of Trumpet
B.M.E. (Nebraska 1968); M.M. (Wichita State 1970) [1998]
- CYNTHIA CYRUS, Assistant Professor of Musicology; Coordinator of Music as a Second
Major
B.A. (Pomona 1984); M.A., Ph.D. (North Carolina 1987, 1990) [1994]
- GARNETT R. DAVIS, Adjunct Assistant Professor of Tuba
B.S. (North Alabama 1968); M.M. (Indiana 1974) [1992]
- AMY DORFMAN, Assistant Professor of Piano
B.M., Performer's Certificate, M.M. (Indiana 1977, 1978, 1981) [1984]
- CYNTHIA ESTILL, Associate Professor of Bassoon and Chair of the Woodwind Department
B.M. (Indiana 1971); M.M. (Peabody 1975) [1972]
- JAMES FOGLESONG, Adjunct Professor of Music Business
B.M. (Eastman 1950) [1991]
- EDWARD FOOTE, Adjunct Instructor of Music
B.F.A. (Louisiana Tech 1975); Certificate (New England Institute for Stringed Keyboard
Technology 1976) [1997]
- ROBIN P. FOUNTAIN, Associate Professor of Conducting; Director of the Vanderbilt
Orchestra
B.A., M.A. (Oxford 1981, 1982); M.F.A. (Carnegie-Mellon 1986) [1994]

- PETER FYFE, Adjunct Professor of Organ; University Organist
B.M., M.M. (American Conservatory [Chicago] 1948, 1949); M.S.M. (Union Theological Seminary [New York] 1951) [1964]
- RUTH GOTTHARDT, Adjunct Artist Teacher of Piano
B.Mus. (Vanderbilt 1998) [1998]
- SUSAN BALDWIN GREEN, Adjunct Artist Teacher of Piano
B.M. (Furman 1983); M.M. (Texas 1985) [2000]
- GERALD GREER, Adjunct Artist Teacher of Violin
Diploma in Music (North Carolina School of the Arts 1987) [1997]
- CORNELIA HEARD, Associate Professor of Violin
B.M., M.M. (Juilliard 1978, 1979); B.A. (Sarah Lawrence 1980) [1982]
- MICHAEL S. HIME, Lecturer in Music Literature; Technology Liaison
B.A., M.M. (Peabody 1973, 1977) [1985]
- AKIKO MATSUO HIRONO, Adjunct Artist Teacher of Piano
B.M. (Michigan 1982) [1989]
- AMY JARMAN, Adjunct Assistant Professor of Voice; Assistant to the Dean
B.A. (Evansville 1978); Performance Diploma (Royal College of Music [London] 1990) [1986]
- WILMA JENSEN, Adjunct Professor of Organ
B.M., M.M., Performer's Certificate (Eastman 1951, 1953, 1953) [1990]
- JOHN JOHNS, Associate Professor of Guitar and Chair of the Department
B.M. (Peabody Conservatory 1970); M.S. (Peabody 1979) [1980]
- SARA JOHNSON, Adjunct Artist Teacher of Suzuki Violin
B.S. (North Carolina, Greensboro 1974); M.F.A. (Iowa 1977) [1997]
- JOE JONES, Adjunct Assistant Professor of Music
B.M. (Northeast Louisiana 1964) [1999]
- ENID KATAHN, Professor of Piano (On leave 2000/2001)
B.M. (Hartt 1955); M.M. (Peabody 1970) [1966]
- FRANK M. KIRCHNER, Adjunct Associate Professor of Saxophone
B.M.E., M.A. (Peabody 1967, 1970) [1989]
- JANE KIRCHNER, Associate Dean of Blair School of Music; Associate Professor of Flute
B.M.E, M.M.E., Ed.S. (Peabody 1966, 1967, 1968) [1966]
- JOHN KOCHANOWSKI, Associate Professor of Viola; Coordinator of String Chamber Music
[1987]
- KAREN ANN KRIEGER, Assistant Professor of Piano
B.A. (Western Illinois 1976); M.Mus. (Illinois 1978) [1988]
- MICHAEL KUREK, Associate Professor of Composition and Chair of the Composition/
Theory Department
B.Mus. (Tennessee 1977); M.Mus., A.Mus.D. (Michigan 1981, 1985) [1988]
- MICHELLE LACKEY, Adjunct Artist Teacher of Viola
B.M. (Cleveland Institute 1993) [1996]
- DANIEL LANDES, Adjunct Associate Professor of Music
B.M. (Shenandoah Conservatory 1972); M.M. (Maryland 1977); D.M.A. (Southern Baptist Seminary 1983) [1996]
- CASSANDRA LEE, Assistant Professor of Clarinet; Coordinator of Woodwind Chamber
Music
B.S. (Tennessee 1975); M.M. (Northwestern 1979) [1981]
- DOUGLAS LEE, Professor of Musicology, Emeritus
B.Mus. (DePauw 1954); M.Mus., Ph.D. (Michigan 1958, 1968) [1986]
- STAN B. LINK, Assistant Professor of the Philosophy and Analysis of Music
B.M. (Oberlin 1986); M.F.A. (Princeton 1992); Ph.D. (Princeton 1995) [1999]

- GILBERT A. LONG, Adjunct Associate Professor of Tuba
B.M.A. (Louisville 1975) [1995]
- MELANIE LOWE, Assistant Professor of Music History and Literature
B.A. (Smith 1990); M.F.A., Ph.D. (Princeton 1992, 1998) [1998]
- BRADLEY MANSELL, Adjunct Artist Teacher of Cello
Mus.B. (Youngstown State 1982); M.M. (Cincinnati 1984) [1990]
- KATHERINE MANSOURI, Adjunct Artist Teacher of Suzuki Violin
B.Mus. (West Virginia 1981); M.Mus. (Southern Illinois 1983) [1997]
- SALLY E. MCFADDEN, Adjunct Senior Artist Teacher of Orchestra
B.M.E. (Mount Union 1975) [1995]
- ERIN MCGINNIS, Adjunct Instructor in Violin
B.M. (Juilliard 1992); M.M. (Manhattan 1994) [1999]
- ELLEN MENKING, Adjunct Artist Teacher of Oboe
B.Mus. (Vanderbilt 1992); M.M. (Indiana 1996) [1997]
- EDGAR MEYER, Adjunct Associate Professor of Bass
B.M. (Indiana 1983) [1984]
- DAVID MITCHELL, Adjunct Artist Teacher of Clarinet
B.M. (DePaul 1996) [1997]
- MAUREEN NEEDHAM, Associate Professor of Dance History; Co-Coordinator of the Music Minor Program
B.A. (Radcliffe 1969); M.A. (Illinois 1972); Ph.D. (New York 1989) [1985]
- CAROL REINER NIES, Adjunct Senior Artist Teacher of Conducting; Director of the Nashville Youth Orchestra Program
B.M. (Miami [Florida] 1979); M.M. (Yale 1981) [1996]
- CRAIG NIES, Associate Professor of Piano; Co-Chair of the Keyboard Department
B.M. (Curtis 1974); M.M., M.M.A. (Yale 1979, 1980); D.Mus.A. (SUNY, Stony Brook 1991) [1991]
- MARTIN NORSGARD, Visiting Assistant Professor of Fiddle
B.M. (William Paterson, 1989); M.M. (Queens College, 1991) [2000]
- LESLIE NORTON, Adjunct Assistant Professor of Horn
B.M., Performer's Certificate (Eastman 1984, 1984) [1989]
- CLARA MARY OLSON, Adjunct Artist Teacher of Violin
B.M. (Cincinnati 1984) [1991]
- SARAH PAGE, Adjunct Instructor in Aural Studies
B.Mus. (Vanderbilt 1995); M. Mus. (Georgia 2000) [2000]
- JOE REA PHILLIPS, Senior Artist Teacher of Guitar; Assistant to the Dean
B.S., M.S. (Peabody 1977, 1977) [1985]
- CRYSTAL D. PLOHMAN, Artist Teacher of Fiddle and Director of the Fiddling Program; Co-Coordinator of the Music Minor Program
[1994]
- KATHRYN PLUMMER, Associate Professor of Viola and Chair of the Strings Department
B.M. (Indiana 1970) [1974]
- TRACY PRENTICE, Adjunct Assistant Professor of Voice
B.M. (Alabama 1978); M.M. (Yale 1981) [1983]
- JAMA A. REAGAN, Adjunct Artist Teacher of Piano
B.M. (North Carolina School of the Arts 1987); Associate Diploma (Royal College of Music 1992) [1997]
- JONATHAN A. RETZLAFF, Associate Professor of Voice and Chair of the Department
B.M. (Millikin 1979); M.M. (Wichita State 1981); D.M.A. (Arizona State 1990) [1997]
- STEPHEN RHODES, Adjunct Professor of Music
B.M.Ed. (Abilene Christian 1975); M.M., D.A. (Northern Colorado 1976, 1987) [1998]

- PHYLLIS G. RICHMOND, Adjunct Assistant Professor of Dance
A.B. (Barnard 1969); M.A. (Columbia 1974); C.M.A. (Laban/Bartenieff Institute of Movement Studies 1982); M.S.T.A.T. (Brighton, Alexander Centre [United Kingdom] 1991) [1985]
- NORMA GROBMAN ROGERS, Adjunct Artist Teacher of Flute, Piccolo, and Recorder
B.M.E., M.S. (Indiana 1969, 1971) [1972]
- MELISSA K. ROSE, Assistant Professor of Piano
B.M. (West Chester 1983); M.M. (Yale 1985); D.M.A. (Michigan 1988) [1996]
- MICHAEL ALEC ROSE, Associate Professor of Composition (On leave 2000/2001)
B.A., M.A. (Pennsylvania 1981, 1982); Ph.D. (Eastman 1985) [1986]
- DWAYNE SAGEN, Assistant Dean for Admissions, Blair School of Music; Adjunct Professor of Music; Director, Vanderbilt Symphonic Wind Ensemble; Coordinator of Ensembles; Coordinator, M.Ed. Program
B.M., M.M. (Northwestern 1968, 1969); Ph.D. (Iowa 1978) [1995]
- JOHN F. SAWYER, Professor of Music Performance, Emeritus; Dean of Blair School of Music, Emeritus
B.M. (Mississippi 1953); M.M. (Peabody 1954) [1964]
- KENNETH SCHERMERHORN, Adjunct Professor of Music
Artist's Diploma (New England Conservatory 1950); D.M.A. (Ripon 1973) [1989]
- DAVID SCHNAUFER, Adjunct Associate Professor of Dulcimer
[1995]
- PAMELA SCHNELLER, Senior Lecturer in Choral Music; Director of the Vanderbilt Concert Choir; Director of the Children's Choral Program, Director of the Vanderbilt Community Chorus; Co-Coordinator of the Music Minor Program
B.S. (Illinois 1972); M.C.M. (Scarritt 1987) [1999]
- ROLAND SCHNELLER, Senior Artist Teacher of Piano and Co-Chair of the Keyboard Department; Coordinator of Pre-College Scholarships
B.M. (Mount Union 1961); M.M. (Indiana 1963) [1964]
- STEVE SEIFERT, Adjunct Instructor in Dulcimer
[1997]
- MARIAN J. SHAFFER, Adjunct Professor of Harp
B.A. (Stephens 1972); M.A. (Memphis 1974) [1996]
- GAYLE SHAY, Assistant Professor of Voice; Director of the Vanderbilt Opera Theatre
B.A. (Luther 1986); M.M. (Maryland 1990); D.M.A. (Colorado 1998) [1998]
- HELENA SIMONETT, Adjunct Assistant Professor of Music History and Literature
Lic.Phil. I (Zurich [Switzerland] 1992); Ph.D. (California, Los Angeles 1997) [1999]
- PAMELA SIXFIN, Adjunct Senior Artist Teacher of Violin
B.M. (Juilliard 1975) [1984]
- MICHAEL SLAYTON, Visiting Assistant Professor of Music Theory
B.A. (David Lipscomb 1994); M.M. (Houston 1996); D.M.A. (Houston 2000) [1999]
- CARL F. SMITH, JR., Senior Lecturer of Music Composition and Theory
B.M. (Baldwin Wallace 1971); M.M. (Washington University 1975) [1998]
- CAROL F. SMITH, Senior Artist Teacher of Violin; Director of the Suzuki Program
M.A.T. (Washington University 1975) [1997]
- ALAN SUSKA, Adjunct Artist Teacher of Trumpet
B.S.M.E. (Duquesne 1978) [1998]
- BOBBY G. TAYLOR, Associate Professor of Oboe
B.M.E. (Louisville 1962) [1969]
- CHRISTIAN TEAL, Professor of Violin
B.M. (Indiana 1969); M.M. (Catholic 1971) [1972]
- CELESTE HALBROOK TUTEN, Artist Teacher of Suzuki Violin
B.M.E. (Peabody 1974); M.Ed. (Memphis State 1976) [1990]

- MARY KATHRYN VANOSDALE, Adjunct Assistant Professor of Violin
Performer's Certificate (Banff School of Fine Arts 1982); M.M. (Northern Illinois 1984)
[1985]
- PATSY WADE, Adjunct Artist Teacher of Piano
B.M. (Birmingham Southern 1971); M.M. (Peabody 1972) [1998]
- MARK WAIT, Dean of Blair School of Music; Professor of Music
B.M. (Wichita State 1971); M.M. (Kansas State 1973); D.M.A. (Johns Hopkins 1976)
[1993]
- DEANNA WALKER, Adjunct Artist Teacher of Piano
B.M. (Eastern New Mexico 1986); M.M. (Johns Hopkins 1988) [1998]
- FELIX WANG, Assistant Professor of Cello
B.M. (Peabody Conservatory 1991); M.M. (New England Conservatory 1993); D.M.A.
(Michigan 1998) [1999]
- GLEN WANNER, Adjunct Assistant Professor of Bass
B.M. (Southern California 1986); M.M. (New England Conservatory 1988) [1993]
- JAMES WELLS, Adjunct Artist Teacher of Chorus; Director of the Blair Boychoir
[1999]
- WILLIAM G. WIGGINS, Assistant Professor of Percussion and Chair of the Brass and
Percussion Department; Coordinator of the Pre-College Program
B.S. (Peabody 1968); M.M. (Northwestern 1989) [1973]
- ANNE HALL WILLIAMS, Senior Artist Teacher of Suzuki Violin and Cello
B.M. (Kentucky 1965); M.A. (Indiana University of Pennsylvania 1972) [1986]
- JUNE H. WILLIAMS, Adjunct Instructor in Viola da Gamba
A.B. (Radcliffe 1965); M.Phil. (Yale 1970) [1991]
- JOY WORLAND, Adjunct Artist Teacher of Horn
B.M. (Wisconsin 1985) [1992]

School of Engineering

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KENNETH F. GALLOWAY, Ph.D., Dean
K ARTHUR OVERHOLSER, Ph.D., P.E., Associate Dean
JOHN R. VEILLETTE, Ph.D., Associate Dean for Preparatory Academics
PAUL T. ROHLING, B.S., Director of Alumni and Development
KATY BRANDT, M.B.A., Administrative Officer
MARY LOU O'KELLY, B.A., Executive Secretary to the Dean
KAREN DOLAN, B.S., Student Services Manager
ELISSA EVANS, M.A., Academic Credentials Evaluator

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W. WESLEY ECKENFELDER, JR., Adjunct Distinguished Professor of Environmental and Water Resources Engineering
TOMLINSON FORT, Centennial Professor of Chemical Engineering
M. DOUGLAS LEVAN, Centennial Professor of Chemical Engineering
ARTHUR M. MELLOR, Centennial Professor of Mechanical Engineering
FRANK L. PARKER, Distinguished Professor of Environmental and Water Resources Engineering
RICHARD E. SPEECE, Centennial Professor of Civil and Environmental Engineering
JANOS SZTIPANOVITS, E. Bronson Ingram Distinguished Professor of Engineering
TAYLOR G. WANG, Centennial Professor of Materials Science; Centennial Professor of Applied Physics

Department Chairs

THOMAS R. HARRIS, Biomedical Engineering
M. DOUGLAS LEVAN, Chemical Engineering
DAVID S. KOSSON, Civil and Environmental Engineering
ARTHUR J. BRODERSEN, Electrical Engineering and Computer Science
ROBERT W. PITZ, Mechanical Engineering

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- SAFETY. Donald L. Kinser, Chair. Kenneth F. Galloway, Robert L. Galloway, Jr., Karl B. Schnelle, Jr., Richard E. Speece, Francis M. Wells.
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- REPRESENTATIVES TO THE FACULTY SENATE. Alan R. Bowers, Frederick R. Haselton, Robert W. Pitz, Ronald D. Schrimpt, Mitchell D. Wilkes. Ex Officio: Kenneth F. Galloway.

Faculty

- MARK DAVID ABKOWITZ, Professor of Civil and Environmental Engineering; Professor of Management of Technology; Co-Director, Vanderbilt Center for Environmental Management Studies, Institute for Public Policy Studies
S.B., S.M., Ph.D. (Massachusetts Institute of Technology 1974, 1976, 1980) [1987]
- JOHN D. ALLISON, Senior Research Associate in Electrical Engineering and Computer Science
B.A., Ph.D. (Texas 1984, 1992) [1998]
- A. V. ANILKUMAR, Research Associate Professor of Materials Science and Engineering
B.Tech. (Indian Institute of Technology 1982); M.S., Ph.D. (California Institute of Technology 1983, 1988) [1990]
- DANIEL B. ARENA, Adjunct Instructor in Computer Science
B.A., M.S. (Rutgers 1986, 1990) [1997]
- JAMES E. AUER, Research Professor of Management of Technology; Director, Center for U.S.-Japan Studies and Cooperation; Lecturer in East Asian Studies
B.A. (Marquette 1963); A.M., M.A.L.D., Ph.D. (Tufts 1969, 1970, 1972) [1988]
- R. ROBERT BALCARCEL, Assistant Professor of Chemical Engineering
B.S. (California, Berkeley 1993); Ph.D. (Massachusetts Institute of Technology 1999) [1999]
- THEODORE BAPTY, Research Assistant Professor of Electrical Engineering
B.S. (Pennsylvania 1985); M.S., Ph.D. (Vanderbilt 1995, 1995) [1992]
- J. FRITZ BARNES, Assistant Professor of COmputer Science
B.S. (Oakland 1995); Ph.D. (California, Davis 2000) [[2000]
- ROBERT JOEL BARNETT, Senior Research Associate in Mechanical Engineering
B.E., M.S., Ph.D. (Vanderbilt 1970, 1978, 1993) [1993]
- PRODYOT K. BASU, Professor of Civil and Environmental Engineering
B.S. (Lucknow [India] 1957); B.S. (Jadavpur 1961); M.S. (Calcutta 1963); D.S. (Washington University 1977); P.E. [1984]

- BRUCE M. BAYER, Professor of Mechanical Engineering, Emeritus
B.E., M.S. (Vanderbilt 1935, 1952); P.E. [1946]
- ROBERT J. BAYUZICK, Professor of Chemical Engineering; Professor of Materials Science and Engineering and Director of the Program
B.S. (Pittsburgh 1961); M.S. (Denver 1963); Ph.D. (Vanderbilt 1969) [1968]
- ROBERT J. BEIL, Professor of Engineering Mechanics, Emeritus
B.S. (East Tennessee State 1947); M.S. (Oklahoma A. & M. 1949); B.E. (Vanderbilt 1960); Ph.D. (Purdue 1966) [1952]
- JOHN BERS, Adjunct Associate Professor of Management of Technology
B.S. (Yale 1968); Ed.D. (Harvard 1975); M.B.A. (Chicago 1984); Ph.D. (Vanderbilt 1998) [1998]
- BHARAT L. BHUVA, Associate Professor of Electrical Engineering; Associate Professor of Computer Engineering
B.Sc. (Maharaja Sayajirao University of Baroda 1982); M.S., Ph.D. (North Carolina State 1984, 1987) [1987]
- CSABA BIEGL, Research Assistant Professor of Electrical Engineering
B.E.E., M.E.E., Dr.Tech. (Technical University of Budapest 1982, 1984, 1988); Ph.D. (Vanderbilt 1988) [1988]
- GAUTAM BISWAS, Associate Professor of Computer Science; Associate Professor of Computer Engineering; Associate Professor of Management of Technology
B.Tech. (Indian Institute of Technology 1977); M.S., Ph.D. (Michigan State 1980, 1983) [1987]
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Peabody College

I

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M. CHRISTINE LAFEVOR, B.S., Director of Teacher Licensure
CLARENCE E. (TRES) MULLIS III, M.B.A., Director of Alumni and Development
BETTY S. LEE, M.Ed., Registrar
MARGARET W. MOORE, M.Ed., Special Assistant to the Dean

Faculty Council

Jacob E. Adams, Jr., David S. Cordray, Anne L. Corn, Joseph J. Cunningham, Clifford A. Hofwolt, Ann M. Neely, James W. Pellegrino, Claire E. Smrekar, Mary R. Watson, Bahr Weiss. *Ex Officio*: Camilla P. Benbow.

Named Professorship

JAMES W. PELLEGRINO, Frank W. Mayborn Professor of Cognitive Studies

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AFFIRMATIVE ACTION. Penelope H. Brooks, Vera A. Stevens Chatman, Dale C. Farran, Douglas Fuchs, Edward A. Martin, Mary R. Watson.

TEACHING. Patricia Arnold, Gina L. Frieden, Alene H. Harris, Kimberly J. Paulsen, Sharon L. Shields, Claire E. Smrekar.

CURRICULUM AND EDUCATIONAL PROGRAMS. Janet S. Eyler, Lynn S. Fuchs, Clifford A. Hofwolt, Ann M. Neely, Amy B. Palmeri, Richard L. Percy, John J. Rieser. *Ex Officio*: Betty Lee.

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