

School of Medicine Catalog

Vanderbilt University 2019/2020

Containing general information and courses of study for the 2019/2020 session corrected to August 2019 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 time or part time, who are enrolled in Vanderbilt courses are subject to the same policies.

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Policies concerning noncurricular matters and concerning withdrawal for medical or emotional reasons can be found in the *Student Handbook*, which is on the Vanderbilt website at *vanderbilt.edu/student_handbook*.

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School of Medicine Calendar 2019/2020

FALL SEMESTER 2019

Classes begin for 3rd- and 4th-year M.D. students / Monday 8 July Classes continue for 2nd-year M.D. students / Monday 1 July Orientation/Registration for 1st-year M.D. students / Wednesday 17 July–Friday 19 July Classes begin for 1st-year M.D. students / Monday 22 July Fall semester begins for VUSM master's and doctoral programs (other than M.D.) / Wednesday 21 August Labor Day—No M.D. classes or clinical activities / Monday 2 September Fall break for VUSM master's and doctoral programs (other than M.D.) / Thursday 24 October–Sunday 27 October Fall break for 1st-year medical students / Monday 21 October–Tuesday 22 October Thanksgiving holiday for VUSM master's and doctoral programs (other than M.D.) / Saturday 23 November–Sunday 1 December Thanksgiving holiday for all M.D. students / Thursday 28 November–Sunday 1 December Fall semester ends for all VUSM master's and doctoral programs (other than M.D.) / Thursday 5 December Holiday break for all VUSM master's and doctoral programs (other than M.D.) / Thursday 5 December Holiday break for all VUSM master's and doctoral programs (other than M.D.) / Sunday 15 December–Sunday 5 January, 2020 Fall semester ends for all M.D. students / Friday 20 December Holiday break for all M.D. students / Friday 21 December–Sunday 5 January, 2020

SPRING SEMESTER 2020

Classes begin for all M.D. students / Monday 6 January Spring semester begins for VUSM master's and doctoral programs (other than M.D.) / Monday 6 January Martin Luther King Jr. Day—No class or clinical activities / Monday 20 January Spring break for 2nd-year M.D. students / Saturday 29 February–Sunday 8 March Spring break for VUSM master's and doctoral programs (other than M.D.) / Saturday 29 February–Sunday 8 March Spring break for 1st-year M.D. students / Saturday 25 April–Sunday 3 May Spring semester ends for VUSM master's and doctoral programs (other than M.D.) / Monday 20 April Instruction ends for 4th-year M.D. students / Wednesday 29 April Commencement / Friday 8 May Memorial Day—No class or clinical activities / Monday 25 May

Memorial Day—INO class of clinical activities / Monday 25 I

SUMMER SESSION 2020

May term begins for VUSM master's and doctoral programs (other than M.D.) / Monday 4 May May term ends for VUSM master's and doctoral programs (other than M.D.) / Friday 29 May Full summer term begins for VUSM master's and doctoral programs (other than M.D.) / Tuesday 2 June Summer break for 1 st-year M.D. students (Tentative) / Saturday 25 July–Sunday 23 August Full summer term ends for VUSM master's and doctoral programs (other than M.D.) / Friday 7 August

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School of Medicine Administration

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Continuing Medical Education/Maintenance of Certification

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Doctor of Medical Physics

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Master of Science in Clinical Investigation

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Master of Science (Applied Clinical Informatics)

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Additional information about the Vanderbilt University School of Medicine faculty, staff, and programs may be found on the web at **medschool.vanderbilt.edu**.

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Vanderbilt University School of Medicine Standing Committees

Executive Faculty of the Vanderbilt University School of Medicine

The Executive Faculty reviews, on a regular basis, the work of the VUSM Undergraduate Medical Education Accreditation Standards Committee, in order to monitor School of Medicine compliance with all LCME standards and elements. The Executive Faculty also provides advice and counsel on the formulation of major policies that pertain to LCME compliance.

The Executive Faculty meets monthly during the academic year. The Executive Faculty may additionally meet whenever requested by the dean of the School of Medicine or a majority of the Executive Faculty.

The Executive Faculty of the School of Medicine consists of the dean of the School of Medicine, the chairs of all VUSM clinical and basic sciences departments (except those in the Section of Surgical Sciences), and those center directors in the School of Medicine who report directly to the dean. Voting members from the Section of Surgical Sciences are the chair of the Section and the chair of one of its departments. Ex officio members without voting rights include School of Medicine senior associate deans, associate deans, and Vanderbilt University Medical Center (VUMC) hospital directors. At the discretion of the dean, other non-voting individuals may be invited to attend Executive Faculty meetings when the agenda makes such attendance appropriate.

The dean of the School of Medicine presides at the meetings of the Executive Faculty. In the dean's absence a member of the Executive Faculty who is designated by the dean presides.

Jeffrey R. Balser, Chair. Zeena Abdulahad, Ronald Alvarez, Gordon Bernard, Donald Brady, Nancy Brown, Melinda Buntin, Richard Caprioli, Nancy Carrasco, Roger Chalkley, Walter Chazin, Dane Chetkovich, Meg Chren, André Churchwell, Roger Colbran, Jeff Conn, William (Bill) Cooper, Nancy Cox, James Crowe, Bill Cutrer, Robert Dittus, Marilyn Dubree, Ron Eavey, Amy Fleming, John Gore, Kathy Gould, Kathie Hartmann, Stephan Heckers, Gerald Hickson, Julie Hudson, Kevin Johnson, Seth Karp, David Kennedy, John Kuhn, Ian Macara, Mark Magnuson, John Manning, Lawrence Marnett, Keith Meador, Steve Meranze, Lisa Monteggia, Cecelia Moore, Jeff Neul, Linda Norman, Reed Omary, John Penn, David Penson, Jennifer Pietenpol, Wright Pinson, Al Powers, Ann Price, David Raiford, Jeff Rathmell, Dan Roden, Russell Rothman, Margaret Rush, Warren Sandberg, Samuel Santoro, Eric Shinohara, Yu Shyr, Eric Skaar, Corey Slovis, Bill Stead, Paul Sternberg, Kyla Terhune, Anne Marie Tharpe, Ed Trevathan, Jeanne Wallace, Steve Webber, Matthew Weinger, Consuelo Wilkins, Chris Williams, John York, Wei Zheng, Mary Zutter.

Executive Committee of the Executive Faculty

The dean appoints an Executive Committee of the Executive Faculty (ECEF) to facilitate the work of the Executive Faculty and to advise on matters requiring decisions. The ECEF possesses the full powers of the Executive Faculty and may act in its stead with full authority. The ECEF may initiate new policies or change previous policies established by the Executive Faculty in matters related to curriculum. Such decisions can be nullified or reversed by a two-thirds majority vote of the Executive Faculty.

The ECEF's roles include:

- The vetting and endorsement of School of Medicine faculty appointments and promotions to the senior ranks (associate professor and professor),
- Evaluation of appeals by department chairs following negative decisions by the Appointments and Promotions Committees of the School of Medicine,
- Evaluation of nominations for promotion of faculty to emeritus status, and
- Evaluation of proposals to transition faculty off of the tenure track.
- In addition, the ECEF:
- Reviews the list of School of Medicine students who have met degree requirements and recommends them for degree conferral,
- Evaluates appeals of students who have been dismissed by degreespecific promotions and progress committees,

 Provides input on other matters related to academic policies of importance to the School of Medicine and Vanderbilt University Medical Center, and which require review and action outside the standing meetings of the Executive Faculty. The ECEF is advisory to the dean.

Melinda J. Buntin, Nancy Carrasco, Dane M. Chetkovich, David J. Kennedy, Keith G. Meador, Jeffrey C. Rathmell, Yu Shyr, Steven A. Webber, Consuelo H. Wilkins

Faculty Appointments and Promotion Committee (FAPC) and Clinical Practice Appointment and Promotion Committee (CPAPC)

These committees, appointed by the dean, are responsible for consideration of faculty promotion in the School of Medicine and for examination of credentials of candidates for appointment to faculty positions.

- FAPC: Mark E. Frisse, Chair. Lori A. Deitte, Peter D. Donofrio, C. Gaelyn Garrett, Deborah P. Jones, Ethan Lee, Pratik P. Pandharipande, Richard Simerly, Larry L. Swift. Ex officio: Alyssa H. Hasty, John S. Penn, David S. Raiford.
- CPAPC: Neal R. Patel, Chair. Rony A. Adam, Rochelle F. Andreotti, Robert J. Deegan, Robert F. Miller, William M. Petrie. Ex officio: John S. Penn, David S. Raiford.

Vanderbilt Institute for Clinical and Translational Research (VICTR) Scientific Review Committee

The VICTR Scientific Review Committee meets regularly to act upon research proposals requesting support for the use of the VICTR resources including the Clinical Research Center, Health Services Research, Biomedical Informatics, Biomedical Statistics, Research Cores, and Research Support Services.

Harvey Murff, Co-chair; Alan Storrow, Co-chair. Donald Alcendor, Eric Austin, Evan Brittain, David Charles, Bruce Damon, Zhongmao Guo, David Haas, Rizwan Hamid, Darlene Jenkins, Tiye Link, Melanie Lutenbacher, and Ashley Shoemaker. Ex officio: Gordon R. Bernard, Italo Biaggioni, Frank E. Harrell, Kevin Niswender.

Vanderbilt Human Research Protections Program and Institutional Review Board Committees (IRB)

The Vanderbilt Human Research Protections Program (HRPP) supports and facilitates the IRB process, the purpose of which is to protect human research subjects engaged by Vanderbilt University and Vanderbilt University Medical Center research studies. The HRPP administers the Vanderbilt Institutional Review Board Committees, assuring the policies and procedures of Vanderbilt University and Vanderbilt University Medical Center are effective and applied in compliance with state and federal laws and regulations, as well as consistent with the policies of the FWA, OHRP, FDA, NIH, OCR, and other applicable federal agencies.

In addition, the Vanderbilt HRPP performs and documents quality assurance activities (including internal and external monitoring) to assure compliance with state and federal regulations. These activities include directed audits and random compliance reviews. Based on these reviews, the HRPP formulates and implements, as needed, recommendations for investigators and their staff. The HRPP also takes enforcement action on noncompliance according to HRPP policies and procedures, as necessary.

The HRPP conducts ongoing educational programs (e.g., News You Can Use, Research Matters, IRB Essentials, etc.) for investigators, key study personnel, IRB Committee members, and HRPP staff.

Vanderbilt Institutional Review Board (IRB)

Committees

- Social and Behavioral Sciences Committee
- Health Sciences Committee #1
- Health Sciences Committee #2
- Health Sciences Committee #3
- Sub-Committees of the IRB
 - Radioactive Drug Research Committee
 - Institutional Biosafety Committee for Human Subjects
 - Institutional Human Pluripotent Cell Research Oversight

Global Health Education Committee

The Global Health Education Committee (GHEC) supports the vision of the School of Medicine and the Vanderbilt University Medical Center to provide an array of global health education and training opportunities for VUSM and VUMC trainees while simultaneously enhancing the capacity of our partners in a collaborative effort to address global health challenges.

Donald Brady, Melissa Carro, Quentin Eichbaum, Natasha Halasa, Doug Heimburger, Julie Lankford, Marie Martin, and Melinda New.

VA Academic Partnership Council for the Department of Veterans Affairs, Tennessee

The VA Academic Partnership Council is the fundamental administrative unit for policy development and evaluation of educational and research programs at the affiliated Department of Veterans Affairs, Tennessee Valley Healthcare System (TVHS). It is composed of senior faculty members of the School of Medicine and others who are associated with TVHS.

Committee Voting Members:

Veronica Mallett, Chairperson. John Nadeau, Co-chairperson. David Baker, R. Daniel Beauchamp, Nancy Brown, Brian Christman, Leon Dent, Stephan H. W. Heckers, Suzanne Jené, Cynthia Johnson, Stephen McLeod-Bryant, Linda Norman, Alphonse Pasipanodya, David Raiford, Don Rubin, Sam R. Sells, Duane Smoot, James Staiger, Jennifer Vedral-Baron, Leonard Webster, Lloyda B. Williamson.

Non-Voting Members:

Donald Brady, Brent Holman, Marianne Myers, Frank Royal, Amy Vadnais.

Vanderbilt University

When Commodore Cornelius Vanderbilt gave a million dollars to build and endow Vanderbilt University in 1873, he did so with the wish that it "contribute to strengthening the ties which should exist between all 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 2,000 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 334-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.

Blair School of Music. Bachelor of Music, Bachelor of Musical Arts.

Divinity School. Master of Divinity, Master of Theological Studies, Master of Theology.

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

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

Law School. Master of Laws, Doctor of Jurisprudence.

School of Medicine. Master of Education of the Deaf, Master of Genetic Counseling, Master of Public Health, Master of Science in Clinical Investigation, Master of Laboratory Investigation, Master of Science in Medical Physics, Master of Science (Applied Clinical Informatics, Speech-Language Pathology), Doctor of Audiology, Doctor of Medical Physics, Doctor of Medicine.

School of Nursing. Master of Science in Nursing, Doctor of Nursing Practice.

Owen Graduate School of Management. Master of Accountancy, Master of Business Administration, Master of Management in Health Care, Master of Marketing, Master of Science in Finance.

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

Mission, Goals, and Values

Vanderbilt University is a center for scholarly research, informed and creative teaching, and service to the community and society at large. Vanderbilt will uphold the highest standards and be a leader in the

- quest for new knowledge through scholarship,
- dissemination of knowledge through teaching and outreach,
- creative experimentation of ideas and concepts.

In pursuit of these goals, Vanderbilt values most highly

- intellectual freedom that supports open inquiry,
- equality, compassion, and excellence in all endeavors.

Accreditation

Vanderbilt University is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award bachelor's, master's, professional, and doctoral degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097, call (404) 679-4500, or visit *sacscoc.org* for questions about the accreditation of Vanderbilt University.

Please contact the commission only in relation to Vanderbilt's noncompliance with accreditation requirements. Normal inquiries about admission requirements, educational programs, and financial aid should be directed to the university.

No honorary degrees are conferred.

ANDERBILT provides a full complement of auxiliary services to meet the personal needs of students, to make life on the campus comfortable and enjoyable, and to provide the proper setting for academic endeavor.

Vanderbilt University Student Resources

Student Care Network

The Student Care Network is a holistic network of services and resources pertaining to health and wellness available to all Vanderbilt University students. Primary offices include the Office of Student Care Coordination, the University Counseling Center, the Student Health Center, and the Center for Student Wellbeing. Students also have access to a wide range of additional on-campus and community resources through the Student Care Network—from the Vanderbilt Recreation and Wellness Center to the Project Safe Center to a variety of community providers. To facilitate finding resources, students may refer to the Student Care Network website, or contact the Office of Student Care Coordination, *vanderbilt.edu/ studentcarenetwork*.

Office of Student Care Coordination

The Office of Student Care Coordination is committed to supporting undergraduate, graduate, and professional students in successfully navigating life events related to academic stress and/or medical, mental health, and/or other personal concerns that may interfere with a student's ability to achieve their academic and personal goals. This team of "care coordinators" is the central and first point of contact for students to help identify needs and determine the most appropriate resources in Vanderbilt's Student Care Network and in the Nashville community to address concerns. Student Care Coordinators work collaboratively with students to develop a student success plan, share education about and facilitate connections to appropriate on- and off-campus resources, and provide accountability through supportive follow-up meetings. Our goal is for students to have the right support, in the right place, at the right time. In addition, the Office of Student Care Coordination coordinates support for students returning from medical leaves of absence. Though staff typically have a background in mental health services, it is important to understand that work with a Student Care Coordinator is not counseling or therapy.

Many students face challenges during their educational experiences and each situation is unique. The Office of Student Care Coordination is the first step to determine where to go for the most appropriate support for your needs. Students are encouraged to visit *vanderbilt.edu/carecoordination* to complete an initial assessment and schedule an appointment to meet with a Student Care Coordinator. Students may also call (615) 343-WELL (9355) or drop in to see a Student Care Coordinator, Monday–Friday, 8 a.m. to 5 p.m., Sarratt Student Center|Rand Hall, Suite 305.

University Counseling Center

As a key component of the Vanderbilt Student Care Network, the UCC provides mental health assessment, support, and treatment for all students enrolled at Vanderbilt, including undergraduate, graduate, and professional students.

Highly skilled and multidisciplinary teams of professionals offer crisis intervention, substance abuse counseling, short-term individual counseling, group therapy, biofeedback, ADHD and learning disorder assessments, and psychiatric assessment and pharmacological treatment. Treatment plans are tailored to each individual's unique background and needs. UCC professionals support the university's mission of fostering inclusive excellence through cultural awareness and competence. In addition to regular hours and evening/weekend crisis response, the UCC offers various "Let's Talk" locations.

To access UCC services, visit *vanderbilt.edu/ucc* or the Office of Student Care Coordination's website at *vanderbilt. edu/carecoordination* or call the OSCC at (615) 343-WELL (9355). For immediate crisis support or to speak with someone at the UCC after business hours, call the UCC at (615) 322-2571.

Student Health Center

The Student Health Center provides primary care services for students and is staffed by physicians, nurse practitioners, nurses, and lab technicians. The Student Health Center provides services similar to those provided in a private physician's office or HMO, including routine medical care, specialty care (e.g. nutrition and sports medicine), and some routine lab tests. Most of the services students receive at the Student Health Center are pre-paid, but those services that are not are the responsibility of students to coordinate with their health insurance.

When the university is in session, during fall and spring semesters, the Student Health Center is open Monday through Friday from 8:00 a.m. to 4:30 p.m. Students should call ahead to schedule an appointment at (615) 322-2427 or online at *vumc.org/student-health/online-appointments*. Students with urgent problems will be seen on a same-day basis. They will be given an appointment that day, or "worked in" on a first-come, first-served basis, if no appointments are available.

Emergency consultation services are available from on-call professionals at (615) 322-2427 when the Student Health Center is closed. For more detailed information on the services available at the Student Health Center and information on other health-related topics, please visit the Student Health Center website at *vumc.org/student-health*.

Immunization Requirements

The State of Tennessee requires certain immunizations for all students on university campuses. As such, Vanderbilt University will block student registration for those who are not in compliance with the requirements.

The requirements include:

- 1. *Varicella vaccine (two injections)* is required for all students who have not had documented chickenpox history. Positive titer results are also accepted.
- 2. *Measles, mumps, and rubella (2 injections)* for all incoming students. Positive titer results are also accepted.

The Student Health Center requires all incoming students to complete a Health Questionnaire that includes further information regarding the state-mandated vaccinations, as well as information on other strongly recommended vaccinations.

Information regarding this Health Questionnaire is communicated to students by email after admission to Vanderbilt University. This Health Questionnaire must be returned to the Student Health Center by May 15 with vaccination information.

Students should go to *vumc.org/student-health/immunization-requirements-new-students* in order to access more information regarding the immunization requirements and information on how to upload their documentation via the secure student health portal.

Student Health Insurance Plan

All students registered in degree programs for 4 or more credit hours, or who are actively enrolled in research courses (including but not limited to dissertation or thesis courses) that are designated by Vanderbilt University as full-time enrollment are required to have health insurance coverage. The university offers a sickness and injury 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 online at *gallagherstudent.com/vanderbilt* or *vumc.org/student-health/student-health-insurance*.

The annual premium is in addition to tuition and is automatically billed to the student's account. Coverage extends from August 12 until August 11 of the following year, whether a student remains in school or is away from the university.

A domestic student who does not want to subscribe to the insurance plan offered through the university must complete an online waiver process at *gallagherstudent.com/vanderbilt*. This process must be completed by August 1 for students enrolling in the fall for annual coverage. Newly enrolled students for the spring term must complete the online waiver process by January 1. The online waiver process indicating comparable coverage **must be completed every year by August 1** in order to waive participation in and the premium for the Student Injury and Sickness Insurance Plan.

Family Coverage: Students who want to obtain coverage for their families (spouse, children) may do so at *gallagherstudent*. *com/vanderbilt*. Additional premiums are charged for family health insurance coverage and cannot be put on a student's VU account.

International Student Coverage

International students and their dependents residing in the United States are required to purchase the university's international student injury and sickness insurance. This insurance is required for part-time as well as full-time students.

Center for Student Wellbeing

The Center for Student Wellbeing seeks to create a campus culture that supports students in cultivating lifelong wellbeing practices. The center offers individual coaching appointments to help students develop and maintain skills that will contribute to personal and academic success, and provides workshops on a variety of topics, including resiliency, time management, alcohol and other drug education, and healthy living. Students may use the center's meditation room for yoga, meditation, and mindfulness classes, or for self-guided practice. The center also works closely with many campus partners, including the University Counseling Center, the Student Health Center, the Office of Housing and Residential Education, and the academic deans to provide resources and support for students who may be facing personal or academic challenges.

The Center for Student Wellbeing is centrally located on campus at 1211 Stevenson Center Lane, across from the Student Health Center, and is open Monday through Friday, 8:00 a.m. to 5:00 p.m. For more information, please call (615) 322-0480 or visit *vanderbilt.edu/healthydores*.

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 Student Access Services. Services include, but are not limited to, extended time for testing, assistance with locating sign language interpreters, audio textbooks, physical adaptations, notetakers, reading services, and reasonable accommodations for housing and dining. Accommodations are tailored to meet the needs of each student with a documented disability. Specific concerns pertaining to services for people with disabilities or any disability issue should be directed to the Disability Program Director, Student Access Services. Mailing address: PMB 407726, 2301 Vanderbilt Place, Nashville, Tennessee 37240-7726. Walk-in address: 108 Baker Building. Phone (615) 343-9727; fax (615) 343-0671; vanderbilt. edu/student-access.

Nondiscrimination, Anti-Harassment, and Anti-Retaliation

The Title IX and Student Discrimination Office (*vanderbilt. edu/title-ix*) and/or the Equal Employment Opportunity Office (*vanderbilt.edu/eeo*) investigate allegations of prohibited discrimination, harassment, and retaliation involving members of the Vanderbilt community. This includes allegations of sexual misconduct and other forms of power-based personal violence. Director of Title IX and Student Discrimination Molly Zlock is Vanderbilt's Title IX coordinator.

If you believe that a member of the Vanderbilt community has engaged in prohibited discrimination, harassment, or retaliation, please contact the Title IX and Student Discrimination Office and/or the Equal Employment Opportunity Office. If the offense is criminal in nature, you may file a report with Vanderbilt University Police Department.

The Title IX and Student Discrimination Office also facilitates interim accommodations for students impacted by sexual misconduct and power-based personal violence. Some examples of interim accommodations include no contact orders, adjusted course schedules, and housing changes.

Specific concerns pertaining to prohibited discrimination, harassment, or retaliation, including allegations of sexual misconduct and other forms of power-based personal violence, should be directed to the Title IX and Student Discrimination Office at (615) 343-9004.

Equity, Diversity, and Inclusion

Excellence at Vanderbilt is inextricably tied to the university's commitment to fostering an inclusive community where

people of all identities, backgrounds, and perspectives can thrive. The vice provost for strategic initiatives and the vice chancellor for equity, diversity, and inclusion and chief diversity officer work in partnership with students, faculty, and staff to identify and implement best practices that advance equity, diversity, and inclusion across campus in pursuit of building and supporting an inclusive community enriched by a broad variety of experiences and knowledge. Visit *vanderbilt.edu/ diversity* for more information.

Inclusive Excellence

Diversity, inclusion, and community engagement are essential cornerstones of Vanderbilt's commitment to equity and trans-institutional discovery and learning. The Office for Inclusive Excellence has as its mission to work in partnership with members of the Office of the Provost and Vanderbilt colleges and schools to ensure that we advance the success and affirmation of all students and faculty. The Office for Inclusive Excellence oversees and establishes strategic initiatives to promote academic success, professional and cultural education, and inclusivity and belonging. Visit *vanderbilt.edu/ inclusive-excellence* for more information.

Project Safe Center

The Project Safe Center partners with students, faculty, and staff to create a campus culture that rejects sexual violence and serves as a resource for all members of the Vanderbilt community. The Project Safe Center provides support to survivors of intimate partner violence and engages the campus community in prevention of sexual assault, dating violence and domestic violence, and stalking.

Bystander intervention training, an online education module addressing sexual violence, and a variety of programs and presentations on consent, healthy relationships, and violence prevention are available through the Project Safe Center. A 24-hour support hotline answered by Project Safe's victim resource specialists is available at (615) 322-SAFE (7233).

The Project Safe Center located at 304 West Side Row is open Monday through Friday, 8:00 a.m. to 5:00 p.m. For more information, please call (615) 875-0660 or visit *vanderbilt.edu/ projectsafe*.

Barnes & Noble at Vanderbilt

Barnes & Noble at Vanderbilt, the campus bookstore located at 2525 West End Avenue, offers textbooks (new, used, digital, and rental), computers, supplies, dorm accessories, licensed Vanderbilt merchandise, and best-selling books. The bookstore features extended hours of operation and hosts regular special events. Visitors to the bookstore café can enjoy Starbucks coffees, sandwiches, and desserts while studying. Free customer parking is available in the 2525 garage directly behind the bookstore. For more information, visit *vubookstore. com*, follow *twitter.com/BN_Vanderbilt*, find the bookstore on Facebook at *facebook.com/VanderbiltBooks*, or call (615) 343-2665.

The Commodore Card

The Commodore Card is the Vanderbilt student ID card. It can be used to access debit spending accounts, VU meal plans, and campus buildings such as residence halls, libraries, academic buildings, and the David Williams II Student Recreation and Wellness Center.

ID cards are issued at the Commodore Card Office, 184 Sarratt Student Center, Monday through Friday from 8:30 a.m. to 4:00 p.m. For more information, go to *vanderbilt.edu/ cardservices*.

Eating on Campus

Vanderbilt Campus Dining operates several restaurants, cafés, and markets throughout campus that provide a variety of food. The two largest dining facilities are Rand Dining Center in Rand Hall (connected to Sarratt Student Center) and The Ingram Commons dining hall. E. Bronson Ingram College offers all-you-care-to-eat dining and is open to all Vanderbilt University students. Five convenience stores on campus offer grab-and-go meals, snacks, beverages, and groceries. The convenience stores located at Kissam Center and Highland Munchie offer hot and cold food bars which are open for breakfast, lunch, and dinner. All units accept the Commodore Card and meal plans, Graduate student meal plans are offered at a discount. For more information about meal plans, hours, and menus, please visit *campusdining.vanderbilt.edu*.

To support the housing needs of new and continuing graduate and professional students, the Office of Housing and Residential Education provides a web-based off-campus referral service (offcampushousing.vanderbilt.edu). The referral service lists information about housing accommodations off campus. Cost, furnishings, and conditions vary greatly. For best choices, students seeking off-campus housing should consult the website as early as possible. The website includes listings by landlords looking specifically for Vanderbilt-affiliated tenants. Listings are searchable by cost, distance from campus, number of bedrooms, and other parameters. Students may also complete a profile to assist in finding a roommate. On-campus university housing for graduate or professional students is not available.

Change of Address

Housing

Students who change either their local or permanent mailing address are expected to notify the University Registrar immediately. Candidates for degrees who are not in residence should keep the school and the University Registrar informed of current mailing addresses. To change or update addresses, visit *registrar.vanderbilt.edu/academic-records/change-of-address.php*.

International Student and Scholar Services

ISSS provides immigration advising and services, including the processing of immigration paperwork, to more than 1,952 international students and scholars. The office works with admission units, schools, and departments to generate documentation needed to bring nonimmigrant students and scholars to the U.S. Further, ISSS keeps abreast of the regulations pertaining to international students and scholars in accordance with the Departments of Homeland Security and State. ISSS advising staff are available to support students' and scholars' requests through email, phone calls, daily drop-in hours (1:30–3:30 p.m., Monday–Friday), and private appointments. ISSS puts a strong emphasis on providing employment workshops to inform international students about professional development and employment options while enrolled and after graduation. ISSS conducts regular workshops on Curricular Practical Training (CPT), Optional Practical Training (OPT), and Academic Training (AT). ISSS also supports more than 300 alumni international students who have already graduated and are either on OPT or AT work permission. For additional information on ISSS services, visit *vanderbilt.edu/isss*.

The Center for Teaching

The mission of the Center for Teaching is to promote university teaching that leads to meaningful student learning. The services of the center are available to all graduate students, including those teaching at Vanderbilt as teaching assistants (TAs) and instructors of record, as well as those who anticipate that teaching will be a part of their future careers.

Fall TA Orientation (TAO) introduces participants to teaching at Vanderbilt, focusing on the information and skills necessary to take on TA roles in the classroom. Workshops and practice teaching sessions are led by experienced graduate student teaching assistants.

The Certificate in College Teaching has been designed to assist graduate students who wish to develop and refine their teaching skills. The certificate focuses on the research on how people learn and best teaching practices, and supports the university's pursuit of excellence in teaching and learning. The certificate is ideal for graduate students whose goals are to become more effective educators and who want to prepare for future careers in higher education teaching.

The Blended and Online Learning Design (BOLD) Fellows Program helps graduate students partner with faculty members to design and develop online modules for integration into a course. The teams implement these modules in existing classes and investigate their impact on student learning.

The Certificate in Humanities Teaching & Learning is a program for humanities graduate students that comprises a sequential seminar and practicum in which participants explore humanistic pedagogies and teaching historically underrepresented populations.

The Graduate Teaching Fellows and Teaching Affiliates Program provides graduate students the opportunity to work at the center, facilitating the programs offered to graduate students, consulting with TAs, and collaborating on teaching-related projects.

For more information and other services, please visit the Center for Teaching website at *cft.vanderbilt.edu* or call (615) 322-7290.

The Writing Studio

The Writing Studio offers graduate students personal writing consultations, fifty-minute interactive discussions about writing. Trained writing consultants can act as sounding boards and guides for the development of arguments and the clarification of ideas. The focus of a consultation varies according to the individual writer and project. In addition to the standard fifty-minute consultations, the Writing Studio also offers dissertation writers the possibility of having extended appointments with the same consultant on an ongoing basis. Fifty-minute appointments can be scheduled online at *vanderbilt. edu/writing*. Extended appointments must be arranged in advance through *writing.studio@vanderbilt.edu* and are available on a first-come, first-served basis. Information about other programs for graduate students, such as the journal

Information Technology

Vanderbilt University Information Technology (VUIT) offers voice, video, data, computing, and conferencing services to Vanderbilt students, faculty, and staff. VUIT provides free antivirus downloads and malware prevention in many campus areas.

VUIT maintains and supports VUnet, the campuswide data network that provides access to the internet, and AccessVU, the authentication service that enables Vanderbilt users to securely identify themselves to many services on VUnet. Those services include YES (Your Enrollment Services), Brightspace, and Vmail, the university's email system for faculty, staff, and graduate students.

VUIT also partners with Sprint, Verizon, and AT&T to offer discounts for cellular phone service. For discount information see *it.vanderbilt.edu/cellphone.*

It is important to note that many wireless consumer electronic devices interfere with VUnet, and in worst-case circumstances, could even cause degradation to network service. These devices are prohibited and include, but are not limited to, routers, access points (APs), or AirPorts manufactured by companies such as Apple, Belkin, D-Link, and Linksys. Additionally, settings for smartphone hotspots and wireless connectivity for printers and other devices must be disabled to prevent interference with university wireless APs.

Vanderbilt offers all students low-cost and free-of-charge software, including Microsoft Office and Microsoft Windows. See *softwarestore.vanderbilt.edu* for a complete product catalog and more information.

Furthermore, VUIT provides various conferencing and collaboration services for students, including audio and video conferencing via a desktop or a Polycom bridge. Vanderbilt's blog service offers WordPress Blogs at *my.vanderbilt.edu*. See *it.vanderbilt.edu/services/collaboration* for more information.

The Tech Hub is the help desk at Vanderbilt that provides information to students, faculty, and staff about VUnet and VUnet services. Its locations, hours, contacts, and other information can be found at *it.vanderbilt.edu/techhub*.

For more information on IT services and computing at Vanderbilt, go to *it.vanderbilt.edu*.

The Jean and Alexander Heard Libraries

The Jean and Alexander Heard Libraries system at Vanderbilt University houses nearly five million items and provides access to millions more resources through its nine campus libraries: Central Library (A&S); Peabody Library; Annette and Irwin Eskind Family Biomedical Library and Learning Center; Walker Management Library; Wilson Music Library; Massey Law Library; Stevenson Science and Engineering Library; the Divinity Library; and the Special Collections Library. These libraries share an online presence that provides access to an integrated catalog of print and e-resources, as well as information about library services, workshops, programs, exhibitions, research guides, and librarian subject specialists.

Library staff teach students to be information literate and help them develop research skills in an increasingly complex information environment. Students can connect with a librarian in person or ask questions through the library website. Library spaces across campus offer quiet individual study spaces, group study, and instructional rooms, as well as learning commons and cafes. Faculty- and student-curated exhibitions throughout the libraries offer intellectual and creative insights that encourage students to think critically and see their own work in new ways. Students, faculty, and staff come to the library to read in a cozy nook, meet friends for group study, grab a quick meal, or attend an author's talk. Even if you are off campus, digital library resources are at your fingertips via your phone, laptop, or computer.

The oldest items in the library date from ca. 2500 BCE, and new publications are being added every day. Among the collection strengths are: Latin American history, politics, and culture; the History of Medicine Collections; the W.T. Bandy Center for Baudelaire and Modern French Studies; the Southern Literature and Culture Collections; the United States Playing Card Collection; and the Vanderbilt Television News Archive, the world's most extensive archive of television news covering 1968 to present. The libraries are also involved in digital scholarship, publishing and partnering with faculty on the Revised Common Lectionary, one of the first published web-based resources of scriptural readings for the liturgical year, Ecclesiastical and Secular Sources for Slave Societies, a digital preservation program for endangered documents related to slave societies, the Global Music Archive, a multimedia archive for traditional and popular song, music, and dance of Africa and the Americas, and Syriaca, a digital project for the study of Syriac literature, culture, and history.

Get to know your libraries and your librarians early in your career at Vanderbilt. They have the information you need and can help you transform that information into knowledge, creativity, and success.

Bishop Joseph Johnson Black Cultural Center

The Bishop Joseph Johnson Black Cultural Center provides educational and cultural programming designed to highlight the history and cultural experiences of African Americans. The center was established in 1984 and named in honor of the first African American student admitted to Vanderbilt University in 1953, Bishop Joseph Johnson (B.D. '54, Ph.D. '58). The BCC activities focus on providing student support and development, campus enrichment, and community engagement.

Student Support and Development (Inclusion)

One of the major aims of the BCC is student support and development. To accomplish this objective, the BCC offers student-driven programming, mentoring initiatives, organizational meeting spaces, service opportunities, and leadership skills training. The BCC also serves as a haven for students, with opportunities for informal fellowship with other students of all levels and backgrounds as well as with faculty and staff.

Campus Enrichment (Diversity)

With campus programming focused on Africans and African Americans, the BCC enriches the overall campus environment by promoting intercultural competence. Specifically, the BCC works with numerous campus partners to sponsor lectures, musical performances, art exhibitions, films, and discussions on African and African American history and culture.

Community Engagement (Equity)

Additionally, the BCC engages in community outreach and service by working with various civic and cultural groups in

the Nashville area. Through community programs and by supporting students as they tutor and mentor young people from underserved areas in the city, the BCC advocates for social justice and equity on campus and in the larger community.

The BCC is located in the center of campus directly behind Buttrick Hall and across from the main campus mailroom. For more information, please call (615) 322-2524 or visit *vanderbilt. edu/bcc.*

Margaret Cuninggim Women's Center

The Margaret Cuninggim Women's Center leads co-curricular campus initiatives related to women's and gender issues. The center partners with many departments, programs, and individuals across campus to raise awareness about the ways in which gender shapes and is shaped by our lived experiences. Because its aim is to make the Vanderbilt community more inclusive and equitable, the center encourages all members of the Vanderbilt community to take part in its events and resources.

The Women's Center celebrates women and their accomplishments and fosters empowerment for people of all identities. The center offers individual support and advocacy around a variety of issues, including gender stereotyping, gender equity, leadership, parenting, body image, disordered eating, pregnancy and reproduction, sexual health, and more. The Women's Center is open Monday through Friday, 9:00 a.m. to 5:00 p.m. and is located at 316 West Side Row. For more information, please call (615) 322-4843 or visit *vanderbilt.edu/womenscenter*.

Office of LGBTQI Life

The Lesbian, Gay, Bisexual, Transgender, Queer, and Intersex Life office is a welcoming space for individuals of all identities and a resource for information and support about gender and sexuality. LGBTQI Life serves the entire Vanderbilt community through education, research, programming, support, and social events. The office also serves as a comfortable study and socializing space, as well as a connection point to the greater Nashville LGBTQI community. In addition, LGBTQI Life conducts tailored trainings and consultations for the campus and community. The Office of LGBTQI Life is located in the K. C. Potter Center, Euclid House, 312 West Side Row. For more information, please visit *vanderbilt.edu/lgbtqi*.

Office of the University Chaplain and Religious Life

The Office of the University Chaplain and Religious Life provides opportunities to explore and practice religion, faith, and spirituality and to more deeply understand one's personal values and social responsibility via educational programming, encounters with various faith perspectives, and engagement with religious and spiritual communities. The office welcomes and serves all students, faculty, and staff and provides an intellectual home and ethical resource for anyone in the Vanderbilt community seeking to clarify, explore, and deepen understanding of their lives and/or faith.

Recognizing the importance of exploring one's faith in community, the office facilitates opportunities for individuals of a shared faith to worship/practice their particular religious tradition. Whether guided by one of our affiliated chaplains or a student-run religious organization, these groups foster a sense of community and common values. For a complete listing of campus religious groups, resources, services, and programming opportunities, visit *vanderbilt.edu/religiouslife*.

Schulman Center for Jewish Life

The 10,000-square-foot Ben Schulman Center for Jewish Life is the home of Vanderbilt Hillel. The goal of the center is to provide a welcoming community for Jewish students at Vanderbilt and to further religious learning, cultural awareness, and social engagement. Vanderbilt Hillel is committed to enriching lives and enhancing Jewish identity. It provides a home away from home, where Jews of all denominations come together, united by a shared purpose. The Schulman Center is also home to Grin's Cafe, Nashville's only kosher and vegetarian restaurant. For further information about the Schulman Center, please call (615) 322-8376 or email *hillel@ vanderbilt.edu*.

Vanderbilt Child and Family Center

Vanderbilt Child and Family Center provides support and resources to the community of Vanderbilt families across the spectrum of life. As reflected in our provision of new parent support, early childhood education, family life resources, and elder care support, VCFC values the university's commitment to the education of the whole person and cultivation of lifelong learning. Visit *vanderbilt.edu/child-family-center*.

Parking, Vehicle Registration, and Alternative Transportation

Parking space on campus is limited. Motor vehicles operated on campus at any time by students, faculty, or staff must be registered with VUPS Parking Services located at 2800 Vanderbilt Place. A fee is charged. Parking regulations are published annually and are strictly enforced. More information is available at *vanderbilt.edu/parking*.

Bicycles must be registered with Vanderbilt University Public Safety.

All graduate and professional students can ride to and from the Vanderbilt campus free of charge on Nashville's Metropolitan Transit Authority buses. To use this service, a valid student ID card is required for boarding the bus.

University Courses

By tackling pressing real-world problems and addressing big questions, University Courses educate the whole student and promote lifelong learning. The courses leverage the natural synergies across Vanderbilt's ten schools and colleges, giving students the opportunity to reach beyond their area of study and interact with faculty at the intersection of disciplines. Each course promotes transinstitutional learning while providing opportunities to embrace diverse perspectives. For more information, visit *vu.edu/university-courses*.

Official University Communications

Certain federal statutes require that information be delivered to each student. Vanderbilt delivers much of this information via email. Official electronic notifications, including those required by statutes, those required by university policy, and instructions from university officials, will be sent to students' Vanderbilt email addresses: *user.name@vanderbilt.edu*. Students are required to be familiar with the contents of official university notifications, and to respond to instructions and other official correspondence requiring a response. Some messages will include links to the YES Communications Tool, which is a secure channel for official communication of a confidential nature.

The university makes every effort to avoid inundating students with nonessential email (often called "spam"), and maintains separate lists from which students may unsubscribe for announcements of general interest.

Prior Degrees

It is the policy of Vanderbilt University to verify prior educational credentials for all admitted students who intend to matriculate. All matriculated students must provide official copies of transcripts and any other required supporting documentation to Vanderbilt University as part of the prior degree verification process. The Office of the University Registrar will review transcripts and other supporting documentation for authenticity and to confirm degrees earned prior to matriculation at Vanderbilt. Offers of admission are contingent on a student's providing the required documentation. Students who are not able to provide evidence of prior degrees will not be permitted to register for subsequent terms and may be subject to dismissal from the university.

Vanderbilt University Police Department

The Vanderbilt University Police Department, (615) 322-2745, is a professional law enforcement agency dedicated to the protection and security of Vanderbilt University and its diverse community (*police.vanderbilt.edu*).

The Vanderbilt University Police Department comes under the charge of the Office of the Vice Chancellor for Administration. As one of Tennessee's larger law enforcement agencies, the Vanderbilt University Police Department provides comprehensive law enforcement and security services to all components of Vanderbilt University including the academic campus, Vanderbilt University Medical Center, Vanderbilt Health at One Hundred Oaks, and a variety of university-owned facilities throughout the Davidson County area.

The Police Department includes a staff of more than one hundred people, organized into three divisions under the Office of the Associate Vice Chancellor and Chief of Police: Operations Division (Main Campus, Medical Center, and 100 Oaks Precincts), Administrative Division, and Auxiliary Services Division. All of Vanderbilt's commissioned police officers have completed officer training at a state-certified police academy and are required to complete on-the-job training as well as attend annual in-service training. Vanderbilt police officers hold Special Police Commissions and have the same authority as that of a municipal law enforcement officer, while on property owned by Vanderbilt, on adjacent public streets and sidewalks, and in nearby neighborhoods. When a Vanderbilt student is involved in an off-campus offense, police officers may assist with the investigation in cooperation with local, state, or federal law enforcement. The department also employs non-academytrained officers called community service officers (commonly referred to as CSOs) who lend assistance 24/7 to the Vanderbilt community through services that include providing walking escorts, providing jump starts, and unlocking cars. For nonemergency assistance from a community service officer, dial (615) 322-2745 (2-2745 from an on-campus extension).

The Vanderbilt University Police Department provides several services and programs to members of the Vanderbilt community:

Vandy Vans—The Vanderbilt University Police Department administers the Vandy Vans escort system at Vanderbilt University. The Vandy Vans escort system provides vehicular escorts to designated locations on campus. The service consists of vans that operate from 6:00 p.m. to 3:30 a.m. GPS technology allows students to track Vandy Vans on their route via computer or mobile phone using the VandySafe app, setting up text message alerts to let them know when a van will be arriving at their stop. Please visit *police.vanderbilt.edu/services/ vandysafe.php* to download the app.

Stop locations were chosen based on location, the accessibility of a secure waiting area, and student input. Signs, freestanding or located on existing structures, identify each stop. A walking escort can be requested to walk a student from his/her stop to the final destination. A van is also accessible to students with mobility impairments. For complete information about the Vandy Vans service, including routes, stops, and times, please visit *vandyvans.com* or call (615) 322-2554.

As a supplement to the Vandy Vans van service, walking escorts are available for students walking to and from any location on campus during nighttime hours. Walking escorts are provided by VUPD officers. The telephone number to call for a walking escort is either (615) 322-2745 (2-2745 from a campus phone) or (615) 421-8888 (1-8888 from a campus phone), after which a representative from VUPD will be dispatched to the caller's location, or to a designated meeting point to accompany the caller to his or her destination.

Emergency Phones—Emergency telephones (Blue Light Phones) are located throughout the university campus, Medical Center, and 100 Oaks.

Each phone has an emergency button that when pressed automatically dials the VUPD Communications Center. An open line on any emergency phone will activate a priority response from an officer. An officer will be sent to check on the user of the phone, even if nothing is communicated to the dispatcher. Cooperation is essential to help us maintain the integrity of the emergency phone system. These phones should be used only for actual or perceived emergency situations.

An emergency response can also be activated by dialing 911 from any campus phone. Cellphone users can dial (615) 421-1911 to summon an emergency response on campus. Cellphone users should dial 911 for off-campus emergencies. Callers should be prepared to state the location from which they are calling.

Exchange Area—The Vanderbilt University Police Department has designated the lobby of the Police building located at 2800 Vanderbilt Place as an "Exchange Area." The Exchange Area is for Vanderbilt University students, faculty, and staff to trade legal items bought and sold online on various secondhand applications in a safe environment. The building/lobby is located next to the Vandy Van stop in lot 72C near Vanderbilt Stadium. Either the seller or buyer must be Vanderbilt affiliated (student, faculty, or staff). The affiliated person must complete the online registration form at *police.vanderbilt.edu/safedeal* prior to the actual trade. Security Notices—In compliance with the U.S. Department of Higher Education and the Jeanne Clery Act, Security Notices are issued to provide timely warning information concerning a potentially dangerous situation on or near Vanderbilt University. This information is provided to empower our students and employees with the information necessary to make decisions or take appropriate actions concerning their own personal safety. Security Notices are distributed throughout Vanderbilt to make community members aware of significant crimes that occur at the university. They are distributed through Vanderbilt email lists and through the department's webpage, *police.vanderbilt.edu/crimeinfo/securitynotices.php*.

Educational and Assistance Programs—The Crime Prevention Unit of Vanderbilt University Police Department offers programs addressing issues such as sexual assault, domestic violence, workplace violence, personal safety, RAD (Rape Aggression Defense) classes, and victim assistance. VUPD provides additional services including property registration (for bikes, laptops, etc.), lost and found, weapons safekeeping, and Submit a Crime Tip. For further information on available programs and services, call (615) 322-7846 or visit *police.vanderbilt.edu/services*.

Additional information on security measures and crime statistics for Vanderbilt is available from the Vanderbilt University Police Department, 111 28th Avenue South, Nashville, Tennessee 37212. Information is also available at *police.vanderbilt.edu*. *Annual Security Report*—The Vanderbilt University Annual Security Report is published each year to provide you with information on security-related services offered by the university and campus crime statistics in compliance with the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act and the Tennessee College and University Security Information Act.

This booklet is prepared with information provided by the Nashville Metropolitan Police Department, the Department of Student Athletics, Office of the Dean of Students, the Office of Housing and Residential Education, and the Vanderbilt University Police Department. It summarizes university programs, policies, and procedures designed to enhance personal safety for everyone at Vanderbilt.

A copy of this report may be obtained by writing or calling the Vanderbilt University Police Department, 111 28th Avenue South, Nashville, Tennessee 37212, or (615) 875-9157 (telephone). A PDF copy of this report may also be obtained on the website at *police.vanderbilt.edu/pdfs/annual-security-report.pdf*.

Obtaining Information About the University

Notice to current and prospective students: In compliance with applicable state and federal law, the following information about Vanderbilt University is available:

Institutional information about Vanderbilt University, including accreditation, academic programs, faculty, tuition, and other costs, is available in the catalogs of the colleges and schools on the Vanderbilt University website at *vanderbilt.edu/ catalogs*.

Information about financial aid for students at Vanderbilt University, including federal and other forms of financial aid for students, is available from the Office of Student Financial Aid and Scholarships on the Vanderbilt University website at *vanderbilt.edu/financialaid*. The Office of Student Financial Aid and Scholarships is located at 2309 West End Avenue, Nashville, Tennessee 37240-7810, (615) 322-3591 or (800) 288-0204. Information about graduation rates for students at Vanderbilt University is available on the Vanderbilt University website at *vanderbilt.edu//pie/*. Select "Facts & Figures," then "Factbook," then "Student," then "Retention/Graduation Rates." Paper copies of information about graduation rates may be obtained by writing the Office of the University Registrar, Vanderbilt University, PMB 407701, 110 21st Avenue South, Suite 110, Nashville, Tennessee 37240-7701 or by calling (615) 322-7701.

The Vanderbilt University Annual Security Report on university-wide security and safety, including related policies, procedures, and crime statistics, is available from the Vanderbilt University Police Department on the university website at *police.vanderbilt.edu/pdfs/annual-security-report.pdf*. A paper copy of the report may be obtained by writing the Vanderbilt University Police Department, 2800 Vanderbilt Place, Nashville, Tennessee 37212 or by calling (615) 343-9750. For more information, see "Vanderbilt University Police Department" in the following section of this catalog.

A copy of the annual *Equity in Athletics Disclosure Act Report* on the Vanderbilt University athletic program participation rates and financial support data may be obtained by writing the Vanderbilt University Office of Athletic Compliance, 2601 Jess Neely Drive, P.O. Box 120158, Nashville, Tennessee 37212 or by calling (615) 322-7992.

Information about your rights with respect to the privacy of your educational records under the Family Educational Rights and Privacy Act is available from the Office of the University Registrar on the Vanderbilt University website at *registrar.vanderbilt.edu/ferpa*. Paper copies of this information about educational records may be obtained by writing the Office of the University Registrar, Vanderbilt University, PMB 407701, 110 21st Avenue South, Suite 110, Nashville, Tennessee 37240-7701 or by calling (615) 322-7701. For more information, see "Confidentiality of Student Records" in the following section of this catalog.

Information about your rights with respect to the privacy of your educational records under the Family Educational Rights and Privacy Act is available from the Office of the University Registrar on the Vanderbilt University website at *registrar.vanderbilt.edu/ferpa*. Paper copies of this information about educational records may be obtained by writing the Office of the University Registrar, Vanderbilt University, PMB 407701, 110 21st Avenue South, Suite 110, Nashville, Tennessee 37240-7701 or by calling (615) 322-7701. For more information, see "Confidentiality of Student Records" below.

Student Records (Family Educational Rights and Privacy Act)

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

1. 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 Office of the University Registrar written requests that identify the record(s) they wish to inspect. The Office of 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 Office of the University Registrar does not maintain the records, the student will be directed to the University official to whom the request should be addressed.

2. 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.

3. 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. These exceptions include:

- 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); contractors, consultants, and other outside service providers 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.
- Disclosure to parents if the student is a dependent for tax purposes.
- Disclosure to appropriate individuals (e.g., parents/guardians, spouses, housing staff, health care personnel, police, etc.) where disclosure is in connection with a health or safety emergency and knowledge of such information is necessary to protect the health or safety of the student or other individuals.
- Disclosure to a parent or legal guardian of a student, information regarding the student's violation of any federal, state, or local law, or of any rule or policy of the institution, governing the use or possession of alcohol or a controlled substance if the University has determined that the student has committed a disciplinary violation with respect to the use or possession and the student is under the age of 21 at the time of the disclosure to the parent/guardian.
- Disclosure to various authorized representatives of government entities (such as, compliance with Student and Exchange Visitors Information System [SEVIS], Solomon Amendment, etc.).

FERPA 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, address, telephone number, email address, student ID photos, 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 information that would not generally be considered harmful or an invasion of privacy if disclosed. Any student who does not wish disclosure of directory information should notify the Office of the University Registrar in writing. No element of directory information as defined above is released for students who request nondisclosure except as required by statute.

The request for nondisclosure does not apply to class rosters in online class management applications, or to residential rosters—or rosters of groups a student may join voluntarily in online, co-curricular engagement applications, or rosters of other information on the websites of student organizations that a student may join. Neither class rosters in online class management applications, nor residential rosters in online co-curricular engagement applications, are available to the public.

As of January 3, 2012, the U.S. Department of Education's FERPA regulations expand the circumstances under which students' education records and personally identifiable information (PII) contained in such records—including Social Security Numbers, grades, or other private information—may be accessed without consent. First, the U.S. Comptroller General, the U.S. Attorney General, the U.S. Secretary of Education, or state and local education authorities ("Federal and State Authorities") may allow access to student records and PII without consent to any third party designated by a Federal or State Authority to evaluate a federal- or state-supported education program. The evaluation may relate to any program that is "principally engaged in the provision of education," such as early childhood education and job training, as well as any program that is administered by an education agency or institution.

Second, Federal and State Authorities may allow access to education records and PII without consent, to researchers performing certain types of studies, in certain cases even when the University objects to or does not request such research. Federal and State Authorities must obtain certain use-restriction and data security promises from the third parties that they authorize to receive PII, but the Authorities need not maintain direct control over the third parties.

In addition, in connection with Statewide Longitudinal Data Systems, State Authorities may collect, compile, permanently retain, and share without student consent, PII from education records, and may track student participation in education and other programs by linking such PII to other personal information that they obtain from other Federal or State data sources, including workforce development, unemployment insurance, child welfare, juvenile justice, military service, and migrant student records systems.

If a student believes the university has failed to comply with FERPA, he or she may file a complaint using the Student Complaint and Grievance Procedures as outlined in the *Student Handbook*. If dissatisfied with the outcome of this procedure, students may file a written complaint with the Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Avenue SW, Washington, DC 20202-5920.

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

Vanderbilt Directory

Individual listings in the online People Finder Directory consist of the student's full name, Vanderbilt email address, and campus mailing address (if available). Students may elect to add additional contact information to their listings, including school, academic classification, local phone number, local address, permanent address, cellphone, pager, and fax numbers. Student listings in the People Finder Directory are available to the Vanderbilt community via logon ID and e-password. Students may choose to make their online People Finder listings available to the general public (i.e., viewable by anyone with access to the internet), or to block individual directory items. Students who have placed a directory hold with the Office of the University Registrar will not be listed in the online directory.

Directory information should be kept current. Students may report address changes, emergency contact information, and missing person contact information via the web by logging in to YES (Your Enrollment Services) *https://yes.vanderbilt.edu* and clicking on the Personal Information link.

Limits of Confidentiality

Imminent Harm/Sexual Misconduct

Imminent Harm to Self or Others. Consistent with Federal Law and Vanderbilt University policy, VUSM may release student information normally considered confidential to appropriate individuals (e.g., health care personnel, police, etc.) if such information is necessary to protect the health or safety of the student or other individuals.

VU Policy on Sexual Misconduct. The Vanderbilt University Student Handbook includes a Sexual Misconduct and Other Forms of Power-Based Personal Violence policy (vanderbilt.edu/student_handbook/sexual-misconduct/). Students who experience violations of this policy are encouraged to report such incidents. It should be noted that all VUSM faculty members, including those in the VUSM advising system, as well as all VUSM administrators, are not confidential resources (they are known as "mandatory reporters"). As outlined in the policy, mandatory reporters are required to report possible violations of this policy to the Title IX Coordinator so that the university can take steps to address the matter promptly and resolve it fairly.

Extracurricular Activities

Student Centers

A variety of facilities, programs, and activities are provided in six separate student center locations—Alumni Hall, The Commons Center, E. Bronson Ingram College, Kissam Center, Sarratt Student Center|Rand Hall, and the Student Life Center.

Sarratt Student Center|Rand Hall is the main student center hub, housing a 300-seat cinema, art gallery, art studios, multicultural space, rehearsal rooms, large lounge spaces, large and small meeting spaces, and a courtyard. The facility is also home to Vanderbilt Student Communications, radio station, TV station, Local Java, and the Pub at Overcup Oak restaurant. Rand Hall houses the Rand Dining Center, campus store, a multipurpose venue, meeting and seminar rooms, plus large, open lounge space. Some of the offices located in Sarratt Student Center Rand Hall include the Dean of Students, Greek Life, Student Leadership, Arts and Campus Events, Student Organizations and Governance, Student Care Coordination, Student Accountability, Community Standards and Academic Integrity, and the Student Center for Social Justice and Identity. Also included in this facility is a United States Postal Service office.

The Vanderbilt Student Life Center is the university's large event space. It is both the fulfillment of students' vision to have a large social space on campus and a wonderful complement to Sarratt Student Center |Rand Hall. The Student Life Center has more than 18,000 square feet of event and meeting space, including the 9,000-square-foot Commodore Ballroom, which is one of the most popular spaces to have events on campus. The center is also home to the Career Center, Global Education Office, Office of Immersion Resources, and Office of Active Citizenship and Service.

The Commons Center is the community crossroads of The Ingram Commons living and learning community. It has it all: the Dining Hall and great food; a living room with a concert-grade grand piano, and the occasional live musical performance; a small rec room with cardio equipment, free weights, and weight machines; meeting and study rooms; and academic support services like the Writing Studio, the Career Center, and the CASPAR premajor advising center. The third floor of The Commons Center is the home of the Department of Political Science.

Alumni Hall was the original student center on campus when the building opened in 1925. Re-opened in fall 2013 after a yearlong renovation that transformed every space in the facility, Alumni Hall has returned to its role as a student center after serving other purposes over the years. In the renovated 2010 Catalor 2010 ine catalor Alumni Hall, students have access to an exercise room as well as several new meeting and event spaces. The Vanderbilt Graduate School calls Alumni Hall home, and lounge space on the first floor serves as a robust hub for student life within the Graduate School community.

Opened in fall 2014 and fall 2018, respectively, Kissam Center and E. Bronson Ingram College are both part of the Vanderbilt residential college system. Kissam Center is home to meeting and event spaces, the Kissam Market, and Kissam Kitchen. E. Bronson Ingram College offers a dining facility, including the award-winning Bamboo Bistro pho concept.

Recreation and Sports

More than two-thirds of Vanderbilt University students participate in club sports, intramurals, group fitness classes, or other programs offered at the David Williams II Student Recreation and Wellness Center, known by students as "the Rec." The large variety of programs available for meeting students' diverse interests include: more than thirty club sports teams; more than thirty intramural sports (softball, flag football, basketball, table tennis, and soccer); and an aquatics program offering swim lessons for all ages and abilities. Red Cross lifeguarding and CPR classes are also available. If being outside is more your style, you can choose from one of the many adventure trips offered each semester or create your own adventure trip with tips and gear from the Outdoor Recreation staff. There are more than sixty group fitness classes a week and a variety of wellness offerings from "learn to box" to healthy eating through Vandy Cooks in the Teaching Kitchen, Personalized Nutrition Coaching, and Nutrition Minute graband-go information on a variety of nutrition topics.

The Rec is a 289,000-square-foot facility that houses a 25-yard, 15-lane swimming pool; four courts for basketball, volleyball, and badminton; five racquetball and two squash courts; a four-lane bowling alley; five group fitness classrooms, more than 14,000 square feet of weight/fitness room space; rock-climbing wall; seven multipurpose rooms; locker rooms; and a 120-yard turf field surrounded by a 300-meter track in the indoor field house. The Rec's exterior spaces include more than seven acres of field space including three natural grass fields and one turf field.

All students pay mandatory student service fees which support the facilities, fields, and programs (see the chapter on Financial Information). Spouses must also pay a fee to use the facilities.

For additional information, please visit vanderbilt.edu/ recreationandwellnesscenter.

Education at the School of Medicine

HE Vanderbilt University School of Medicine administers degree and graduate certificate programs that provide students with the knowledge, skills, and attitudes they need to practice safe, effective, ethical, evidence-based, and patient-centered health care in the twenty-first century, and to contribute to the knowledge base supporting it.

About the School

The school's mission includes the education of physicians at all levels of their professional experience: medical school; postgraduate education, including basic science and clinical training; and continuing education and professional development for the practicing physician. In addition several master's level and two additional doctoral degrees in health care professions are offered.

Faculty members teach the practice of exemplary patient care at all levels; model programs of health care delivery, at primary, secondary, and tertiary levels; and fulfill the school's responsibility for community service.

In addition to teaching, members of the medical school faculty have a complementary responsibility to generate new knowledge through research. At Vanderbilt, research encompasses basic scientific questions, issues in clinical care, questions related to the health care system, and scholarship in the medical education process itself. Vanderbilt is recognized as one of the leaders in research among medical schools in the United States.

Vision and Mission of the School

The vision of Vanderbilt University School of Medicine is to shape a future is which all persons reach their full health potential.

The core values of Vanderbilt University School of Medicine are integrity, inclusion, humility, mutual respect, and excellence.

The mission of Vanderbilt University School of Medicine is to catalyze the advancement of impactful discovery, servant leadership, and lifelong learning.

In order to carry out this mission, we make these strategic commitments:

- To nurture the growth of clinicians, scientists, and educators who will serve and lead their local, national and global communities.
- To create, implement, and disseminate new knowledge that expands understanding of health, disease, and health care systems.
- To teach, learn, and provide compassionate, personalized caring of the highest quality for every patient who seeks our service and to strive to achieve health equity in the populations we serve.
- To embrace a culture of lifelong learning, critical thinking, and innovation so that we continuously improve in all we do.
- To build a diverse community of faculty, staff, and students that expands the richness of our learning environment and enhances excellence in all of our endeavors.

History of the School

The first diplomas issued by Vanderbilt University were to sixty-one doctors of medicine in February of 1875, thanks to an arrangement that recognized the University of Nashville's medical school as serving both institutions. Thus, Vanderbilt embraced a fully-organized and functioning medical school even before its own campus was ready for classes in October of that year.

The arrangement continued for twenty more years, until the school was reorganized under control of the Board of Trust. In the early days, the School of Medicine was owned and operated as a private property of the practicing physicians who composed the faculty and received the fees paid by students—a system typical of medical education in the United States at the time. Vanderbilt made no financial contribution to the school's support and exercised no control over admission requirements, the curriculum, or standards for graduation. After reorganization under the Vanderbilt Board in 1895, admission requirements were raised, the course was lengthened, and the system of instruction was changed to include laboratory work in the basic sciences.

The famous report of Abraham Flexner, published by the Carnegie Foundation in 1910 and afterward credited with revolutionizing medical education in America, singled out Vanderbilt as "the institution to which the responsibility for medical education in Tennessee should just now be left." Large grants from Andrew Carnegie and his foundation, and from the Rockefeller-financed General Education Board, enabled Vanderbilt to carry out the recommendations of the Flexner Report. (These two philanthropies, with the addition of the Ford Foundation in recent years, have contributed altogether more than \$20,000,000 to the School of Medicine since 1911.) The reorganized school drew upon the best-trained scientists and teachers in the nation for its faculty. The full benefits of reorganization were realized in 1925 when the school moved from the old South Campus across town to the main campus, thus integrating instruction in the medical sciences with the rest of the university. The school's new quarters were called "the best arranged combination school and hospital to be found in the United States."

In 1977, the School of Medicine moved to the newly completed Rudolph A. Light Hall, which served as the home for School of Medicine educational and administrative activities for 41 years. The seven-story structure, with its 209,000 square feet of space, offered the latest in laboratory equipment, audiovisual, and multi-purpose classroom space. Thousands of VUSM students, faculty and staff have considered Light Hall the home of the School of Medicine, given that it has served as such for the longest single period of the school's history.

Beginning in 1996, several new degree programs became a part of the School of Medicine. These programs span a wide array of health-related fields, including public health (1996), clinical investigation (2000), audiology (2002), medical physics (2002), laboratory investigation (2004), education of the deaf (2006), speech-language pathology (2007), health professions education (2010), applied clinical informatics (2015), and genetic counseling (2017).

Until April 2016, Vanderbilt University owned and operated several hospitals and clinics collectively known as Vanderbilt

University Medical Center, including Vanderbilt University Hospital, Vanderbilt Psychiatric Hospital, and Monroe Carell Jr. Children's Hospital at Vanderbilt, and their associated clinics. Effective April 30, 2016, Vanderbilt University conveyed the clinical assets used in the operation of Vanderbilt University Medical Center to a newly formed, not-for-profit, tax-exempt corporation, which is similarly named Vanderbilt University Medical Center. Vanderbilt University Medical Center now operates independently of Vanderbilt University. It is clinically and academically affiliated with Vanderbilt University.

In summer 2018, the primary location for Vanderbilt University School of Medicine administrative offices—as well as the classrooms, student lounge, and first-year student lockers for the M.D. program—moved from Light Hall to the Annette and Irwin Eskind Family Biomedical Library and Learning Center (EBL). This new home for the School of Medicine, occupying the second, third, and fourth floors of the EBL, provides a state-of-the-art learning environment, with versatile physical spaces and innovative technology, comfortable, modern gathering spaces for both formal and informal activities for students in the M.D. program, and a bright, airy working environment for School of Medicine faculty and staff. At the same time, Light Hall remains an important venue for learning and co-curricular activities for multiple VUSM degree and certificate programs.

School of Medicine Program Accreditations

Doctor of Medicine—Liaison Committee on Medical Education

LCME Secretariat (AMA) American Medical Association 330 North Wabash Avenue Suite 39300 Chicago, IL 60611-5885 Phone: 312-464-4933 LCME.org

LCME Secretariat (AAMC) Association of American Medical Colleges 655 K Street NW Suite 100 Washington, DC 20001-2399 Phone: 202-828-0596 *LCME.org*

Master of Public Health—Council on Education for Public Health

CEPH

1010 Wayne Avenue, Suite 220 Silver Spring, MD 20910 Phone: 202-789-1050 Fax: 202-789-1895 *CEPH.org* Doctor of Audiology and Master of Science in Speech-Language Pathology—Council on Academic Accreditation (CAA) in Audiology and Speech-Language Pathology

American Speech-Language-Hearing Association (ASHA) 220 Research Boulevard, #310 Rockville, MD 20850 Phone 800-498-2071 *caa.asha.org*

Master of Education of the Deaf—Council for the Accreditation of Educator Preparation (CAEP)

CAEP 1140 19th Street NW, Suite 400 Washington DC, 20036 (202) 223-0077 *caepnet.org*

Doctor of Medical Physics and Master of Science in Medical Physics—Committee on Accreditation of Medical Physics Education Programs

CAMPEP, Inc. 1631 Prince Street Alexandria, VA 22314 Phone: 571-298-1239 Fax: 571-298-1301 campep_admin@campep.org campep.org

Master of Genetic Counseling Program—Accreditation Council for Genetic Counseling

The Vanderbilt University Master of Genetic Counseling Program has been granted accreditation as a New Program by the Accreditation Council for Genetic Counseling (ACGC) effective January 31, 2019. Additional information may be found on the ACGC website at *gceducation.org* and on the VUSM website, at *medschool.vanderbilt.edu/mgc*.

ACGC P.O. Box 15632 Lenexa, KS 66285 (913) 895-4629 gceducation.org

Principal Clinical Education Affiliates

Vanderbilt University Medical Center

Facilities

Vanderbilt University Hospital

Vanderbilt University Hospital (VUH) opened in 1980, with the major addition of the Critical Care Tower in 2009. The hospital is dynamic, growing, and dedicated to meeting the most critical and complex needs of our region, continuing Vanderbilt's more than century-old tradition of offering the best in patient care.

Many patients seen in the hospitals are from states other than Tennessee, with the majority coming from Kentucky, Alabama, and Mississippi.

Adjacent and attached to VUH is Medical Center East, primarily an outpatient services building, but also housing some operating rooms, patient rooms for Labor and Delivery, the Vanderbilt Bill Wilkerson Center and the Vanderbilt Orthopaedics Institute.

The Monroe Carell Jr. Children's Hospital at Vanderbilt

The Monroe Carell Jr. Children's Hospital at Vanderbilt opened as a stand-alone facility in 2004, and is a place of hope and healing for pediatric patients and their families. Recognized as one of the premier children's hospitals in the nation by *U.S. News and World Report* for nine years running, Children's Hospital cares for the sickest patients in the region and beyond.

Children's Hospital is the most comprehensive pediatric facility in Tennessee, providing services including neurosurgery, cancer treatment, trauma care, transplant, and much more. Children's Hospital operates the region's only Level I pediatric trauma unit and a neonatal intensive care unit with the highest designated level of care.

The facility is filled with state-of-the-art equipment and information systems to provide the best treatment for patients. It offers a variety of family accommodations to help fulfill its mission of patient-and family-centered care. In addition, Children's Hospital is a top-ranked teaching and research facility. As a nonprofit organization, the hospital cares for children of Tennessee and surrounding states regardless of their ability to pay.

Vanderbilt Psychiatric Hospital

Vanderbilt Psychiatric Hospital, which opened in 1985, provides inpatient and partial hospitalization services to children, adolescents, and adults with psychiatric and substance abuse problems. Services include 24-hour crisis assessment and a yearround accredited school for children and adolescents.

vanderbilthealth.com/psychiatrichospital

The Vanderbilt Clinic

The Vanderbilt Clinic (TVC), a comprehensive outpatient facility, opened in 1988 and houses more than 100 medical specialty practice areas, the clinical laboratories, a center for comprehensive cancer treatment, and a day surgery center.

Vanderbilt Stallworth Rehabilitation Hospital

Vanderbilt Stallworth provides comprehensive inpatient and outpatient rehabilitation services for adult and pediatric patients with neurological, orthopaedic, and other injuries, as well as chronic conditions and disabilities. The hospital specializes in treating stroke, brain, and spinal cord injury; multiple traumas; amputations; hip fracture; and other diagnoses. Stallworth is a designated Stroke Center of Excellence and repeatedly exceeds the national benchmarks for patient satisfaction and functional outcomes. This hospital is a joint venture with HealthSouth Corporation.

vanderbiltstallworthrehab.com

Vanderbilt-Ingram Cancer Center

Vanderbilt-Ingram Cancer Center (VICC) is Tennessee's only National Cancer Institute (NCI)-designated Comprehensive Cancer Center providing treatment for both adult and pediatric cancer patients. It is also a member of the National Comprehensive Cancer Network, a nonprofit alliance of twenty-six of the world's elite cancer centers collaborating to improve cancer care for patients everywhere. The Cancer Center unites physicians and scientists in research programs in key areas. VICC is ranked in the top 10 in competitively-awarded NCI grant support.

VICC is one of the few centers in the country with a comprehensive program for cancer survivors regardless of age, type of cancer, or where they received their oncology treatment. The center's clinical trials program includes robust work in Phase I drug development and designation by the NCI for Phase I and Phase II clinical trials.

The center also boasts several donor-supported research initiatives, including the Frances Williams Preston Laboratories established by the T. J. Martell Foundation, the A. B. Hancock Jr. Memorial Laboratory for Cancer Research, and the Robert J. Kleberg, Jr., and Helen C. Kleberg Center for Personalized Cancer Medicine.



Vanderbilt Kennedy Center for Research on Human Development

The Vanderbilt Kennedy Center strives to improve life for people with disorders of thinking, learning, perception, communication, mood, and emotion caused by disruption of typical development. Its core values include the pursuit of scientific knowledge with creativity and purpose; the education of scientists, practitioners, families, and community leaders; the facilitation of discovery by Kennedy Center scientists; and the translation of knowledge into practice. The center is one of fourteen National Institutes of Health research centers on mental retardation and other developmental disabilities. It has also been named a University Center for Excellence on Developmental Disabilities Education, Research, and Service by the federal Administration on Developmental Disabilities. The center is an interdisciplinary research, training, diagnostic, and treatment institute, embracing faculty and resources available through Vanderbilt University Medical Center, the College of Arts and Science, and Peabody College.

kc.vanderbilt.edu

Vanderbilt Diabetes Center

The Vanderbilt Diabetes Center provides a comprehensive approach to diabetes for patients of all ages that includes all aspects of health related to diabetes. It also offers programs to equip the next generation of caregivers and scholars. Other programs support the diabetes-related research of VUMC faculty members.

vanderbilthealth.com/diabetes

Center for Experiential Learning and Assessment (CELA)

The Center for Experiential Learning and Assessment (CELA) provides an educationally rich simulation environment for training our students and other health care professionals to practice the highest quality clinical care. Simulation technology has now become a standard for medical education, surgical training, and health care team training. Such programs have resulted in improved performance, quicker response time, and less deviation from practice standards. Healthcare simulators increase trainee confidence and competence, improve patient safety, and can also yield cost and process efficiencies. Our work is grounded in theory-based research and informed by the best educational practices for competent clinical practice. CELA is also instrumental in conducting rigorous research that extends our knowledge and practice of experiential learning and assessment by simulations. The center consists of three programs: the Program in Human Simulations, the Simulation Technologies Program, and the Programs in Surgical and Anatomical Simulation. The Program in Human Simulations brings the traditional standardized patient methods toward a broader use of simulations involving all aspects of human interaction in medicine. The Simulation Technologies Program emphasizes the sophisticated use of computers, task trainers, virtual reality and mannequin-based technologies to simulate clinical challenges. The Program in Surgical and Anatomical Simulation is possible thanks to cadaveric gifts made through the Anatomical Donations Program. All programs provide both unique and integrated approaches to training our medical students in a safe and effective educational environment.

Rudolph A. Light Hall

Light Hall provides classroom and laboratory space for students in the School of Medicine. It houses the Department of Biochemistry, the Department of Molecular Physics and Biophysics, and the Howard Hughes Medical Institute.

Ann and Roscoe Robinson Medical Research Building

Laboratories and academic space for pharmacology, biochem istry, and molecular physiology and biophysics are housed in the Ann and Roscoe Robinson Medical Research Building. The eight-story building is also home to the A. B. Hancock Jr. Memorial Laboratory for Cancer Research.

Frances Preston Medical Research Building

This building is named in honor of the late Frances Williams Preston, President and CEO of Broadcast Music, Incorporated. This building consolidates the Vanderbilt-Ingram Cancer Center's programs into one primary location on the VUMC campus.

Medical Research Building III

MRB III houses research laboratories, teaching laboratories, research support areas, offices, conference rooms, classrooms, and a greenhouse for research and teaching. It is a joint undertaking of the College of Arts and Science and VUMC.

Medical Research Building IV

MRB IV houses a significant amount of wet lab space and supports continued growth in VUMC research programs.

Medical Center North

The Newman Clinical Research Center, an inpatient orthopaedic unit, and a general-care unit are inside Medical Center North. The complex also houses laboratories and administrative support services for VUMC.

Faculty and administrative offices and research space for medical school departments are in Medical Center North. The original portions of the building were completed in 1925. Since that time a number of connecting wings and buildings have been added.

Vanderbilt Health One Hundred Oaks

This 440,000-square-foot doctors' office suite opened for patient care in 2009 and is designed for easy access off the interstate highway system, abundant surface parking, automated check-in, and integrated services, labs, and radiology. It houses numerous specialty clinics, primary care services, and advanced imaging facilities.

Vanderbilt Health Williamson County

Vanderbilt Health Williamson County offers more than 250 physicians in practices ranging from primary care to sports medicine, GI, cancer care, imaging, and pediatrics.

Vanderbilt Dayani Center for Health and Wellness

The Vanderbilt Dayani Center is a medically based fitness/health promotion center that specializes in modifying risk factors, for conditions including cardiovascular disease, weight management, stress, sedentary lifestyle, and smoking. It was the first Certified Medical Fitness Center in Tennessee, is closely aligned with the Department of Physical Medicine and Rehabilitation, and serves patient care, research, and education functions within VUMC. vanderbilthealth.com/dayani

VUMC Strategy and Innovation Office

The Strategy and Innovation Office's mission is to accelerate change in health care. It provides methods for reducing time to results, conducts research through demonstration projects, and supports active learning through sessions that leverage facts during solution design.

vumc.org/strategy/SAI

Vanderbilt Heart and Vascular Institute

The Vanderbilt Heart and Vascular Institute is a comprehensive and integrated program offering diagnosis, treatment, minimally invasive therapies, surgical intervention, disease management, state-of-the-art techniques, and personalized treatment programs to meet each patient's unique needs. vanderbilthealth.com/heart

Vanderbilt Bill Wilkerson Center for Otolaryngology and **Communication Sciences**

The Vanderbilt Bill Wilkerson Center is devoted to comprehensive patient care, education, and research in the field of communication disorders and diseases, as well as ailments of the ear, nose, throat, head, and neck.

vanderbilthealth.com/billwilkerson

Vanderbilt Transplant Center

The Vanderbilt Transplant Center, one of the Southeast's largest, is a multidisciplinary alliance of transplant specialists. Each transplant program within the center represents a collaboration of medical and surgical professionals working together in the best interests of the transplant patient. vanderbilthealth.com/transplant

Graduate Medical Education

Vanderbilt University Medical Center has built a strong reputation as a national and international leader in medical education

of health professionals, research in medical science, and patient care. Residency training began at Vanderbilt University Medical Center with just twelve residents in 1925. Now, VUMC trains more than 1,000 house staff in 90 accredited residency and fellowship programs.

Residency Training

Medical school graduates preparing for the practice of medicine usually spend three or more years in residency training in order to be able to sit for the certification examination in their chosen specialty. Such supervised experiences at Vanderbilt cover an incredibly broad range of specialties and allow the learner to gain graduated responsibility with the ultimate goal of independent practice. Vanderbilt attracts highly qualified candidates from diverse backgrounds, ensuring a house staff that is devoted to delivering safe, high-quality patient care, to succeeding in their chosen discipline, and to teaching other learners in the process. As a result, the house staff take their responsibility in medical student teaching as both an honor and a privilege and devote considerable time to the medical students.

In addition to their primary responsibilities at Vanderbilt University Medical Center (including Vanderbilt University Hospital, Monroe Carell Jr. Children's Hospital at Vanderbilt, the Vanderbilt Psychiatric Hospital, and The Vanderbilt Clinic), the residents also work in a variety of other clinical settings across Nashville including the Veterans Administration Hospital, St. Thomas Midtown (formerly Baptist Hospital), and St. Thomas West, with supervision by outstanding faculty in each setting.

Vanderbilt University Medical Center (VUMC) is a major referral center and consequently has a patient population with complex pediatric, medical and surgical problems. The Veterans Administration Hospital, adjacent to VUMC, serves veterans and their families from throughout the mid-south and is an important component of the teaching program. All physicians at the VA Hospital are full-time faculty members of the School of Medicine.

Post-Residency Clinical Fellowships

After residency training, many physicians choose to pursue further subspecialization through a clinical fellowship. Fellows admitted to these programs must have completed an approved residency program. These training programs have as their goal the training of physicians for practice and certification in a medical subspecialty. As with the residents mentioned above, the fellows are expected to participate in departmental activities related to teaching, clinical services, and research and serve as another outstanding resource for medical student education.

Office for Continuous Professional Development

Vanderbilt University School of Medicine and Vanderbilt University Medical Center recognize a major commitment to the continuous professional development of Vanderbilt and community physicians and others in the health professions. At Vanderbilt, continuing medical education is considered an important part of the continuum of medical education which is initiated in the undergraduate experience, progresses through graduate medical education, and matures in ongoing continuing medical education and continuing professional development. The Division of CME sponsors learning opportunities for physicians and other members of the health care team that enable them to provide the very best possible care to their patients and perform optimally in their other professional responsibilities as measured by improvements in competence, performance, and patient health status. The Vanderbilt University School of Medicine Division of CME maintains Accreditation with Commendation from the Accreditation Council for Continuing Medical Education (ACCME), recognizing demonstrated engagement with the quality improvement enterprise in a way that supports physician learning and quality patient care.

Vanderbilt has also been recognized by the Multi-Specialty Board of the American Board of Medical Specialties (ABMS) as a certified site for the Maintenance of Certification (MOC) Portfolio Program. The MOC Portfolio Program was established by ABMS to permit institutions such as Vanderbilt to provide support to physicians who are pursuing Maintenance of Certification Part IV projects, thus aligning physicians' performance improvement requirements with the institution's performance improvement goals. The Vanderbilt MOC Portfolio Program is a collaborative effort of the Office of Quality, Safety and Risk Prevention, the Informatics Center, and the Office for Continuous Professional Development.

Inquiries about CME or MOC should be directed to the Office for Continuous Professional Development or to departments and divisions about specific programming.

VUSM Office for Diversity Affairs

The Office for Diversity Affairs (ODA), as the Office of Minority Student Affairs, was created in 1991, as a means to focus on the problem of a lack of Underrepresented Groups (URG) in medical school. This work was viewed as foundational to the development of a broader program to imbed diversity and inclusion into the fabric of VUSM and VUMC. These early efforts have led to roughly one of four to one of five members of the VUSM entering medical school class being from a historically URM (Underrepresented in Medicine) group. According to Association for American Medical Colleges (AAMC) data (for the past six years on the top 15 USNWR research medical schools), VUSM URM numbers consistently rank in the top five. Furthermore, in 2011, the Student National Medical Association ranked VUSM #6 in its activities to promote racial diversity in its classes.

Over the last decade, the ODA has worked to build a culture and climate committed to valuing and building diversity and inclusion into the framework of the medical school and medical center. This has been fostered by a number of new activities, including the Levi Watkins Jr. M.D. Lecture, the Martin Luther King, Jr., Day Lecture, Hidden VUMC Figures, and the unveiling of URM faculty portraits, among others. The ODA maintains working relationships with various medical student groups, including those representing African-Americans, Hispanics, Asian-American and Pacific Islanders, LGBTQ, as well as others.

Tennessee Valley Healthcare System of the Veterans Administration

The Tennessee Valley Healthcare System (TVHS), a part of the U.S. Department of Veterans Affairs, is a Level 1A, integrated tertiary healthcare system comprised of two hospitals, the Alvin C. York Campus in Murfreesboro, Tennessee, and the Nashville Campus in Nashville, Tennessee. TVHS has over 20 community-based outpatient clinics located in Tennessee

and Kentucky. TVHS provides ambulatory care, primary care, and secondary care in acute medicine and surgery; specialized tertiary care; transplant services; spinal cord injury outpatient care; and a full range of extended care and mental health services.

TVHS's Nashville Campus is the only VA facility supporting all solid organ transplant programs, including total inhouse kidney and bone marrow transplants and is a national referral site for bone marrow and solid organ transplants. The York Campus is a network referral center for mental health services, long term psychiatric care, geriatrics, and extended care. TVHS provides a full range of specialized medical services.

VUMC is co-located with the TVHS Nashville campus, and they collaborate on many research and educational endeavors, with hundreds of students and providers cross-affiliated with both organizations.

Learning Environment

Information about VUSM Policies

This VUSM catalog contains Vanderbilt University, School of Medicine and VUSM program policies, procedures, and resources intended to inform and guide students, faculty, and administrators in their work related to VUSM programs. Similarly, several other VU-related documents contain information important to the work of students, faculty and administrators. The policies and procedures presented in the VUSM catalog, as well as those presented in each of the following publications and platforms, are designed to function in alignment with one another, and students, faculty, and administrators are required to be familiar with them:

• Vanderbilt University Student Handbook. The handbook covers university policies and regulations on topics such as student conduct, alcohol and controlled substances, student engagement, and sexual misconduct and intimate partner violence, among other topics. The university-wide policies and procedures in the handbook apply to all School of Medicine students. The *Student Handbook* may be found at *vanderbilt.edu/student_handbook*.

• Vanderbilt University Enrollment Bulletin. The bulletin is intended as a single point-of-entry for students to access policies and procedures important to their Vanderbilt University student lives. This resource is most helpful for accessing university-level resources. For areas where relevant information is provided via VUSM- or program-level documents/outlets, the bulletin makes references to appropriate resources.

• **Program Websites/Handbooks.** All VUSM programs maintain websites containing information important for students, faculty, and administrators. Some programs also maintain program handbooks with similar/complementary information. The purpose of these outlets is to provide day-to-day information about the programs, with a focus on practical information and procedures.

• VUSM Student Gateway/Program Student Gateways. The VUSM Student Gateway provides a single point-of-entry for all VUSM students to locate VUSM-wide policies and procedures. Each degree program student gateway provides single point-of-entry to program-level polices and resources.

IMPORTANT NOTICE TO STUDENTS:

All students enrolled in Vanderbilt University programs are bound by all applicable Vanderbilt University, School of Medicine, and degree program policies. By enrolling in a VUSM program, every student acknowledges his or her responsibility to abide by and adhere to all institutional and programmatic policies and procedures. Students, therefore, have the responsibility of being familiar with the policies and procedures described in the documents outlined above.

The Vanderbilt University Statement of the Honor Code

Vanderbilt University students pursue all academic endeavors with integrity. They conduct themselves honorably, professionally, and respectfully in all realms of their studies in order to promote and secure an atmosphere of dignity and trust. The keystone of our honor system is self-regulation, which requires cooperation and support from each member of the university community.

From the Students of Vanderbilt University School of Medicine: The School of Medicine Honor System

The Honor System at Vanderbilt University School of Medicine is conducted by students for the benefit of students, faculty, staff, and patients. The Honor System, as delineated by the Honor Code, requires students to conduct themselves with honor in all aspects of their lives. By demanding great responsibility, the Honor System fosters an environment of freedom and trust that benefits the entire Medical School. In signing this statement upon enrollment, each student agrees to participate in the Honor System and abide by its code.

As representatives of the Vanderbilt University School of Medicine and the medical professions, students pledge to conduct themselves with honor and integrity at all times. The Promotion Committees and the Honor Council serve to protect the environment of trust created by this Honor System. The Promotion Committees periodically evaluate each student's performance with special attention to work and conduct appropriate for professional practice. The Honor Council serves to educate members of the student body about their responsibilities as outlined in the written code; to conduct investigations and hearings regarding reported violations of the code; and to decide the nature of penalties deemed appropriate for such violations. Decisions reached by the Honor Council do not preclude the discussion of reported violations by the Promotion Committees, as the Committees may examine these incidents in the larger context of a student's general performance.

The School of Medicine Honor Code

All students pledge to conduct themselves honorably, professionally, and respectfully in all realms and aspects of medical education and patient care. Under the Honor System, the student pledges that he or she neither gives nor receives unauthorized aid nor leaves unreported any knowledge of such aid given or received by any other student. Unauthorized aid includes the use of any examinations from previous semesters that have not been pre-approved by the course director and made readily available to all other students taking the course. This pledge applies to all course work, examinations, presentations, or any other activities required for the awarding of any of the graduate degrees offered by the school. This pledge encompasses all clinical work involving patient care and representations of patient care information. Any student taking a course in the School of Medicine, regardless of where registered, is under the jurisdiction of the Honor Council of Vanderbilt University School of Medicine (VUSM) and subject to the penalties it may impose.

Constitution

Article I—Name

The name of the council shall be the Honor Council of Vanderbilt University School of Medicine.

Article II—Purpose

- 1. To receive and evaluate evidence of Honor Code violations and to assure against false accusations.
- 2. To determine guilt or innocence.
- 3. To forward to the dean of the School of Medicine appropriate penalties for the guilty.

Article III—Membership and Officers

- A faculty member shall be appointed by the dean of the School of Medicine as the Honor Council adviser. His/her roles include ensuring that all the rules are followed. In the case of an accusation, he/she will decide with the co-chairs of the Honor Council whether there is sufficient evidence to proceed with a trial after a formal investigation has been carried out.
- 2. The Honor Council of the School of Medicine shall be composed of representation from all degree-granting graduate programs under the administrative charge of the school. Currently, this includes Doctor of Audiology (Au.D.), Master of Education of the Deaf (M.D.E.), Master of Science–Speech-Language Pathology (M.S.-S.L.P.), Doctor of Medical Physics (D.M.P.), Master of Science in Medical Physics (M.S.M.P.), Master of Laboratory Investigation (M.L.I.), Master of Public Health (M.P.H.), Master of Science in Clinical Investigation (M.S.C.I.), Master of Science–Applied Clinical Informatics (M.S. A.C.I.), Master of Genetic Counseling (M.G.C.), and Doctor of Medicine (M.D.). Any new graduate degree programs created within the school will become eligible by sufficient enrollment, as stipulated below.
- 3. The minimum student enrollment limit for a single graduate degree program to be eligible to elect an Honor Council representative is ten. If a program falls below that number, it will not be eligible to have a representative. It will regain eligibility when its enrollment reaches a minimum of ten students. However, some of the programs are closely affiliated; if, in the judgment of the program director(s) of these programs, there is sufficient overlap in required courses, these programs may be thought of as a unit (a.k.a., "affiliated degree programs") for purposes of Honor Council representation. In these cases, the degree programs will be grouped for representation purposes, and allowed to elect an Honor Council representative on behalf of the affiliated degree programs. Current affiliated degree programs are the Au.D., M.D.E., and M.S.-S.L.P. programs, which will elect two representatives from their combined student cohorts, and the D.M.P. and M.S.M.P. programs, which will elect one representative from their combined student cohorts. All other non-M.D. programs will elect one representative. The M.D. program will follow its traditional practice of electing two representatives from each of the four classes.

- 4. In the non-M.D. programs, students will vote for Honor Council candidates within their own graduate program or affiliated degree programs. In the M.D. program, students will vote for Honor Council representatives within their own medical student class. Honor Council representatives are elected for one-year terms.
- 5. Honor Council members will select their own co-chairs. Two co-chairs will be elected from the M.D. program Honor Council representatives, for which all Honor Council representatives will vote, and one co-chair will be elected from the non-M.D. Honor Council representatives, for which all Honor Council representatives will vote. In both cases, co-chairs will be elected by simple majority. Co-chairs are elected for one-year terms and must have served at least one year on the council to be eligible.
- 6. Voting for Honor Council representatives will be completed no later than April 1 of each year. The new Honor Council will convene to elect its cochairs no later than April 30. It is the duty of the outgoing Honor Council co-chairs to assure a successful transition. The exception for the April 1 deadline for election of representatives is for incoming medical students who will elect their representatives in September, and for the entering cohort of students in any one-year degree programs, as long as there are at least ten enrolled students in that program.

Article IV—Duties of Officers

- 1. It shall be the duty of the co-chairs to preside at all meetings of the Honor Council, to arrange for the hearing of any student accused, and to perform all duties common to their office.
- 2. The co-chairs shall keep full minutes of all meetings and full proceedings of all hearings, which must be kept in permanent files. The cochairs shall notify all members of all hearings, meetings, and retreats and shall perform any other related duties. These responsibilities will be rotated among the three co-chairs throughout the year.
- 3. Honor Council representatives for each program, together with the co-chairs, will have primary responsibility for conducting an annual program to educate their fellow students about the Honor Council and its processes, and for assuring the timeliness of elections. Program directors and the Honor Council faculty adviser will act in a supportive and advisory capacity.

Article V-Meetings

- 1. One regular meeting shall be held within four weeks of the start of the school year. At this meeting, the co-chairs of the Honor Council and the faculty adviser will explain the duties and procedures of the Honor Council to the members.
- Special meetings may be called by the co-chairs at any time and must be called within ten working days when requested by two or more members of the Honor Council.
- 3. All meetings shall be conducted according to *Roberts Rules of Order, Newly Revised.*
- 4. A meeting by the Honor Council to re-evaluate and review the Honor Code should be convened a minimum of every four years.

Article VI—Quorum

A quorum for an Honor Council hearing concerning a violation of the Honor Code is nine. This quorum may be adjusted by the co-chairs in circumstances in which students recuse themselves because the hearing concerns a faculty member who is, or will be, in a supervisory position over them. The absolute minimum for an Honor Council quorum shall be seven. In rare circumstances when a quorum is otherwise unavailable, the senior associate dean for health sciences education will appoint a temporary student member or members to assure a quorum is present to meet the timeline requirements for due process.

Article VII—Hearings

1. A hearing shall be called by the co-chairs of the Honor Council, if appropriate.

- The accuser and the accused must be present at all hearings during the presentation of evidence and the accused has a right to question the accuser and any witnesses and make a statement to the Council.
- Legal counsel will not be allowed for any party at a hearing, but the accused may have present a character witness or non-legally trained faculty adviser if he or she so chooses.
- 4. Any member of the Honor Council related by birth or marriage to the accused or the accuser or who has any other personal interest in the hearing shall relieve himself/herself from participation in that hearing.
- 5. The proceedings of the hearing are confidential. Any member present at a hearing is not at liberty to discuss its proceedings with anyone other than the members of the Honor Council present at the hearing or other persons with a legitimate need to know, e.g., law enforcement agents.
- 6. In the event a hearing concerns a charge against a graduate student, a medical student or a faculty member who is in a supervisory role for any Honor Council members, those members shall recuse themselves from participation in the hearing.
- 7. Upon completion of the review of evidence, the Honor Council in closed executive session shall reach a decision of "guilty" or "not guilty" of violation of the Honor Code by simple majority vote. The Honor Council shall make its determination using an evidentiary standard of "beyond a reasonable doubt." The co-chairs have a vote in all decisions unless contraindicated by *Roberts Rules of Order*.
- 8. Written notice of the Honor Council decision will be sent to the accused and to the dean of the School of Medicine. The dean will also receive the vote count, a written summary of the case, and an oral report of the case from the co-chairs. The Promotion Committee will not be notified unless a verdict of "guilty" has been found. In the case of a "guilty" verdict, the Promotion Committee will receive a written summary of the proceedings. The written summary also will be kept in the permanent records of the Honor Council.
- 9. When the Honor Council reaches a decision of "guilty," the penalty, representing the majority opinion of the Honor Council, shall be sent to the dean of the School of Medicine. The recommended penalties should conform to the severity of offenses and may include expulsion from the School of Medicine, and may also include lesser penalties such as failure of a course, or suspension for a designated period of time.

Article VIII—Publicity

- Each new student entering the School of Medicine will be informed by the Honor Council as to the functions of the Honor System and his or her obligations to the Honor Code. Each student will be provided a copy of the Constitution and Bylaws of the Honor System and the Honor Code.
- 2. At the commencement of each academic year, all students shall reaffirm their commitment to the honor system by signing the Honor Code.
- 3. Names of the members of the Honor Council will be made known to all students upon commencement of each academic year. The Honor Council members will be accessible to any student to address concerns or questions regarding protocol, violations, or other Honor Council issues.

Article IX—Miscellaneous

In case a student withdraws from the School after a charge has been made against him or her and before the hearing, the Honor Council shall record the facts and the accused shall not be allowed to re-enter until he or she has had a hearing before the Honor Council.

Article X—Amendments

Amendments to this Constitution shall require for their adoption the approval of a majority of the total membership of the Honor Council and ratification by a majority of the voting student body. These amendments must be approved by the dean of the School of Medicine and the faculty adviser before becoming final.

Bylaws

Article I—Reporting an Incident

- If a student or an instructor has reason to believe that a breach of the Honor Code has been committed, he/she must, within seven class days, report the incident in signed written form in one of the following ways:
 - a. Directly to one or both of the co-chairs of the Honor Council, or
 b. By way of the faculty adviser who will notify the co-chairs of the Honor Council, or

c. To any member of the Honor Council, who will report directly and only to either the co-chairs or the faculty adviser.

- Failure to take action on an incident is a breach of the Honor Code. Students are required to report in writing any suspected violations of the Honor Code.
- 3. Once an incident is reported, it shall be the responsibility of the Honor Council, not the student or instructor, to investigate the incident and determine the next course of action. The student or instructor who reports a violation is charged with maintaining confidence of his or her accusation; the accused is also required to maintain the confidence of the accusation and the hearing. Such confidence can be broken only as required in response to law enforcement agencies and to assure access to appropriate advice.
- Perjury before the dean or any Honor Council member regarding the reporting of or investigation into an incident is a breach of the Honor Code and is subject to punishment.
- 5. Once an incident has been reported, the co-chairs and the faculty adviser will meet to discuss the incident. The co-chairs shall appoint a committee of two members from the Honor Council to investigate the case and report their findings to the faculty adviser and the co-chairs. These two members shall be ineligible to vote in the event the Honor Council is convened. At the conclusion of the investigation, the co-chairs and faculty adviser will then decide whether to convene the Honor Council. If the decision is made to convene the Honor Council, the student in question will be notified that he/she has been formally accused of a violation of the Honor Code. The Honor Council should be convened within ten class days from the initial reporting of the incident. Both the accuser and the accused will be notified of the nature of the charge as well as the time and place of the assembly of the Honor Council.
- Once the Honor Council is assembled, the accusation will be presented by the co-chairs, and a hearing will be held by the Honor Council.
- A student who reports his or her own Honor Code violation will be given consideration for his or her initiative in self-reporting the transgression. The co-chairs, with advice of the faculty adviser, will decide if an investigation is warranted.

Article II—Penalties

- 1. Penalties given to those declared "guilty" will be recommended by the Honor Council and enforced by the dean of the School of Medicine as he/she sees fit. The final decision and penalty will be reported by the dean to the student involved, to the reporting individual, and to the Honor Council.
- Penalties may range from the minimum of failure of the assignment to the maximum of expulsion from Vanderbilt University School of Medicine.
- If the violation was committed under extenuating circumstances, the Honor Council may, by a majority vote, recommend a suspension of the sentence. However, suspension of the sentence shall in no way alter the findings of "guilt" under the Code.

Article III—Appeals

- Appeals to any final actions that result from Honor Council hearings can be made with a petition to the Vanderbilt University Appellate Review Board as follows:
 - a. The appeal petition must be in writing.
 - b. It must specify the grounds for appeal.

c. It must be filed within seven class days of the original notification of the verdict or within two weeks if school is not in session for seven days following the notification.

Article IV-Summer Honor Council

- The Summer Council will have official functions from the day following university Commencement exercises until the day class registration begins for the fall semester.
- 2. In the event that a designated member will not be in Nashville during the summer, the respective program representative should appoint a member of his/her class who will be in Nashville, to be approved by the Honor Council.
- In the event that both co-chairs will not be in Nashville during the summer, then the faculty adviser should recommend a chair from the members of the Honor Council, subject to Honor Council approval.

Standards of Behavior for Interactions with Vanderbilt University School of Medicine Students¹

Statement of Standards

All faculty and staff involved with educating Vanderbilt University School of Medicine students are held to high standards of professionalism and patient care. The learning environment is expected to facilitate students' acquisition of the professional and collegial attitudes necessary for effective, caring, and compassionate health care. The development and nurturing of these attitudes requires mutual respect between teachers (including faculty, residents, and staff) and students.² Mutual respect between student and teacher, and between fellow students, may be expressed in many ways but all interactions shall include honesty, fairness, and evenhanded treatment. Behavior that is inimical to the development of mutual respect shall be prohibited. Such behavior may include but is not limited to:

- (1) Harassment of a sexual nature;
- (2) Discrimination or harassment based on race, sex, religion, color, national or ethnic origin, age, disability, military service, sexual orientation, or gender identity.
- (3) Grading, promoting, or otherwise evaluating any student on any basis other than that student's performance or merit.

¹ All Vanderbilt University policies concerning VUSM student interactions with faculty and staff as set forth in the *Vanderbilt University Student Handbook*, the *Faculty Manual*, and any other Vanderbilt University publication remain in full force and effect.

² By their express terms, these Standards apply only to interactions which involve one or more students; however, it is hoped that these Standards serve as a guide to all members of the Vanderbilt University School of Medicine community, in all workplace interactions. The reporting procedure outlined herein shall apply only to allegations of the violation of these Standards in interactions involving VUSM student(s).

Comments

The following delineates more clearly the behavior enumerated above that may be inimical to the development of mutual respect between students and teacher, and between fellow students. For purposes of these Comments, the term "person" shall refer to a student in interactions between fellow students or, in student-teacher interactions, to the student or teacher, as appropriate.

- (1) Harassment of a sexual nature may include:
 - a. Denying the opportunity for training or rewards because of a student's gender;
 - Requesting sexual favors in exchange for grades or other awards;
 - c. Making unwanted sexual advances;
 - d. Unreasonable and inappropriate sexual or sexist conduct directed towards any person;
 - e. Displaying in an unreasonable and inappropriate manner sexually suggestive or pornographic materials; or
 - f. Grading or evaluating a student based upon gender rather than performance or merit.
- (2) Discrimination and harassment may include:
 - a. Denying the opportunity for training or rewards because of a student's age, race, religious affiliation, gender, or any other attribute of the student other than merit or performance;
 - Unreasonable and inappropriate conduct directed towards any person which is intended to insult or stigmatize that person;
 - c. Exclusion of a student from any usual and reasonable expected educational opportunity for any reason other than as a reasonable response to that student's performance or merit;
 - d. Requiring a student to perform personal services such as shopping or babysitting;
 - Showing favoritism among students based upon any attribute of the student(s) other than performance or merit and thereby reducing educational opportunities available to the nonfavored student(s);
 - Grading or evaluating a student based upon any attribute of a student other than that student's performance or merit;
 - Any physical mistreatment, such as hitting, slapping or kicking, or threatening such physical mistreatment; or h. Requiring a student to perform menial tasks with the intent to humiliate the student.

Any perceived violation of these Standards of Behavior ("Standards") should be reported in accordance with the following procedure. Violations of these Standards may subject the offender to disciplinary action. These Standards may be amended at any time by the Executive Faculty. The Standards Committee shall be composed of such members as the dean shall appoint from time to time. In cases where there is a potential conflict between the Standards and university policy, university policy prevails.

Reporting Procedure

When a student feels that he or she has been mistreated, the student is encouraged to report the incident to university and/or medical school officials through a variety of reporting mechanisms (these include ASPIRE, Veritas, trained faculty members, and the Vanderbilt University Title IX and Student Discrimination office). Students are provided information about resources for such reports during orientation. When the mistreatment involves an allegation of discrimination and/ or harassment, including sexual misconduct and/or intimate partner violence, Vanderbilt University faculty and staff members must report the incident to Vanderbilt University Title IX and Student Discrimination. If there is a report of sexual misconduct and/or intimate partner violence involving a student, the Sexual Misconduct and Intimate Partner Violence Policy, which can be found in the Vanderbilt University Student Handbook (vanderbilt.edu/student_handbook/ sexual-misconduct), applies to all Vanderbilt students, including students in the School of Medicine. Please consult that policy for more information.

VUSM Compact Between Teachers and Learners in Medicine

Preamble

As a community of teachers, learners, physicians, and physicians-in-training, we acknowledge the fundamental importance of our professional values in creating and maintaining an environment that promotes the highest standard of learning and the highest quality of patient care. The following principles characterize this environment and guide us in making daily decisions: Respect, Service, Integrity, Accountability, Scholarship, and Compassion. Recognizing that in an academic community we are teachers and learners simultaneously, we make the following commitments with the understanding that each applies to all of us, regardless of our status as faculty, resident, or student.

Commitments of Teachers

- We will respect students, colleagues, staff and patients as individuals.‡
- We will strive to provide the highest quality instruction, by preparing adequately for all teaching sessions, using evidence-based content, arriving on time, and admitting any gaps in knowledge. We will strive for continuous improvement in our teaching efforts by responding to feedback and evaluation.
- We will demonstrate respect for our learners by turning off cell phones and silencing pagers during sessions we teach, unless they are required for service responsibilities.
- We will clearly express learning objectives for all courses and teaching sessions, and understand how these promote the learning objectives of the school. We will clearly define any specific academic and behavioral expectations for our classes.
- We will be aware of institutional and national policies, such as duty hours, and make sure that our expectations are consistent with those policies.
- We will assign tasks that are appropriate for the stage of learning, level of responsibility, and status as students. If an assigned task conflicts with the personal ethics of a learner, we will discuss this with the student and attempt to resolve the conflict in a manner that respects the student while placing priority on the interests and well-being of the patient. We will seek not to require our learners to take actions inconsistent with their personal values.
- We will recognize the responsibilities implicit in our roles as mentors and coaches, and in the spirit of cultivating excellence in our learners, provide timely and constructive feedback.
- We will recognize our status as role models, and in our interactions with patients, staff, students, and colleagues, we will exhibit the same standard of professional behavior that we expect from others.

- We acknowledge that the teacher-learner relationship is a model for the doctor-patient relationship, and will strive to know our students as individuals, answer their correspondences promptly, exercise concern for their well being, and treat them with compassion.
- We will respect the intellectual property of others and will use online resources, such as VSTAR, in a manner that is consistent with that respect.
- We will demonstrate honesty and integrity in all academic endeavors, including examinations, research efforts, and patient care entries.
- We will strive to create a culture of safety. This culture includes evaluation for disclosure, event analysis, and process change when a safety concern is identified.

Commitments of Learners

- We will respect students, colleagues, staff, and patients as individuals[‡]
- We will strive for excellence in attaining the knowledge, attitudes, and skills needed for the highest standard of patient care.
- We will attend all learning sessions designated as required by our teachers, which will include all patient presentations and small group sessions. We will demonstrate respect towards teachers and peers by arriving on time, turning off cell phones, silencing pagers, and complying with other specific expectations defined by the faculty.
 We will wear appropriate attire. In the classroom setting, it should not cause distraction and in the presence of patients, whether in classroom or clinical settings, it should comply with patient expectations and the standards published by the institution.*
 We will work effectively in teams, respecting the
- contributions of all members, assuming a fair share of responsibility, and performing leadership tasks with a sense of service to others.
- We will acknowledge and seek help when an assigned clinical task is beyond our level of skill. If an assigned task conflicts with personal ethics, we will discuss this with the supervising physician and strive to reach a resolution that places priority on the interests of the patient.
- We will recognize our obligations as a collegial community, sharing knowledge and assisting peers in their quest to achieve professional and personal goals. We will assist our colleagues in distress.
- We will establish the habit of critical reflection, acknowledge gaps in our knowledge, recognize our limitations, and strive for constant self-improvement.
- We will respect the intellectual property of others and will use online resources, such as VSTAR, in a manner that is consistent with that respect.
- We will demonstrate honesty and integrity in all academic endeavors, including examinations, research efforts and patient care entries.
- We will strive to create a culture of safety. We will accept responsibility for errors and near-errors by disclosing them, analyzing them and implementing changes that would prevent similar events in the future.
- In the spirit of continuous quality improvement, we will accept the responsibility of constructive evaluation of our courses and teachers.

Acknowledgements

This document draws heavily from the following sources:

1. Association of American Medical Colleges, Compact Between Teachers and Learners of Medicine.

2. National Board of Medical Examiners, Center for Innova-

tion, The Behaviors of Professionalism.

3. ABIM Foundation, ACP-ASIM Foundation, and European Federation of Internal Medicine, Medical Professionalism in the New Millennium: A Physician Charter, *Annals of Internal Medicine*, 136:3, 243-6, 2002.

‡ In compliance with federal law, including the provisions of Title VII of the Civil Rights Act of 1964, Title IX of the Education Amendment of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990, the ADA Amendments Act of 2008, Executive Order 11246, the Vietnam Era Veterans Readjustment Assistance Act of 1974 as amended by the Jobs for Veterans Act, the Uniformed Services Employment and Reemployment Rights Act, as amended, and the Genetic Information Nondiscrimination Act of 2008, Vanderbilt University does not discriminate against individuals on the basis of their race, sex, sexual orientation, gender identity, religion, color, national or ethnic origin, age, disability, military service, covered veterans status, or genetic information in its administration of educational policies, programs, or activities; admissions policies; scholarship and loan programs; athletic or other university-administered programs; or employment. In addition, the university does not discriminate against individuals on the basis of their gender expression consistent with the university's nondiscrimination policy. Requests for information, inquiries, or complaints should be directed to these offices: Faculty and staff-Equal Employment Opportunity, Anita J. Jenious, director, eeoinfo@vanderbilt.edu, telephone (615) 343-9336; Students-Title IX and Student Discrimination, Molly Zlock, Title IX coordinator and director, titleixandstudentdiscrimination@vanderbilt.edu, telephone (615) 343-9004. 110 21st Avenue South, Suite 975, Nashville TN 37203; Students-Student Access Services, Jamie Bojarski, director, disabilityservices@vanderbilt.edu, telephone (615) 343-9727.

*Vanderbilt University Medical Center dress code may be found at vanderbi.lt/ vumcdresscodef

Faculty/Educator Roles

Policy on Multiple Roles

Many VUSM faculty members hold multiple roles in our education program, and we believe that our students benefit from rich relationships with various supportive faculty members. However faculty members engaged in multiple educational roles can face competing demands, which may directly or indirectly affect (or have the appearance of affecting) an individual's professional judgment in exercising any educator duties and responsibilities.

Of particular concern to students is the intersection of roles involving advising students regarding personal or academic struggles with roles in assessment of student performance or assigning grades. Because not all conflicts can be eliminated, it is necessary to establish a plan for managing and minimizing conflict.

Conflict management typically involves ensuring that any individual in an advising role does not serve as the sole assessor of students in any required course. During the academic year, when individuals are proposed for new roles, assignments are reviewed for potential conflicts. Conflict management plans are created by faculty members involved and are reviewed and maintained by the associate dean for undergraduate medical education (M.D. program) and program director (other VUSM degree programs).

Policy on VUSM Faculty Supervising Family

It is the policy of Vanderbilt School of Medicine that students may not be supervised or graded by a parent or family member.

Policy on VUSM Educators Providing Student Health Care

Vanderbilt University Medical Center physicians occasionally provide clinical care for Vanderbilt students. Some of these faculty members also teach and assess students in the classroom or clinical setting. Should a situation arise in which a Vanderbilt faculty member finds himself/herself in a dual role as care provider and as a teacher/assessor of a Vanderbilt student, he/ she must recuse himself/herself from the teacher/assessor role. Examples of such situations include faculty serving as small group leaders in a course, or as team leaders for clinical learning experiences. Furthermore, if a Vanderbilt faculty member serves as a course or clinical learning experience director, placing him/ her in a teacher/assessor role with students in a degree program, he/she should not accept as patients students in that program.

When a student has a pre-existing therapeutic relationship as a patient of a faculty member who directs a course or clerkship, the patient-provider relationship should not be disrupted. In these situations, the faculty member must discuss the situation with the student and arrange for an alternative means of assessment in the course or clinical experience. This arrangement would likely involve identifying a different faculty member to provide the assessment in the course or clinical experience. This policy serves to secure and protect the integrity of the learning environment at the School of Medicine. For questions regarding the implementation of this policy, please contact the senior associate dean for health sciences education.

Expectations for Conduct Regarding Examinations and Work Submitted for Academic Credit

Faculty and Students' Responsibilities

1. In order to create and maintain an academic environment that promotes the highest professional standards, it is important to be transparent in the expectations of all students regarding conduct in examination settings and regarding all work submitted for academic credit. As stated in the Vanderbilt School of Medicine Honor Code, "By demanding great responsibility, the Honor System fosters an environment of freedom and trust that benefits the entire Medical School." It is the responsibility of the faculty and staff to help protect the trusting environment created when the students agree to and sign the Honor Code pledge.

2. In order to facilitate transparency of expectations, students are apprised of appropriate conduct for a given course on the first day of class or during the first week that a course meets. Standards of behavior for each course are published in the course syllabus, and course directors explain the pertinent points (especially in regards to examinations) verbally as well.

3. Appropriate attribution is expected for all work submitted for credit and in all entries to the electronic health record. Students must use proper citation practices and are expected to be aware of appropriate mechanisms to avoid plagiarism. Faculty clarify if an assignment may be collaborative.

4. It is the student's responsibility to be aware of and to adhere to the published guidelines for each course.

5. Incidents going before the Honor Council may be separately incorporated into the competency domain assessment and promotion committee review process as appropriate.

Admission to School of Medicine Programs

Technical Standards

All candidates for admission must possess sufficient intelligence, integrity, and personal and emotional characteristics with or without reasonable accommodations to meet the academic requirements of the respective School of Medicine program without fundamental alteration in the nature of the program. Requests for disability-related reasonable accommodation should be made to Vanderbilt University Student Access Services (SAS). The senior associate dean for health sciences education, the admission committee for the applicable degree program, and Vanderbilt University SAS are responsible for interpreting these technical standards as they may apply to an individual applicant to a School of Medicine program, as well as to any enrolled student. In addition, the School of Medicine interprets and implements these standards consistently with any applicable federal and state law.

Each VUSM degree program may enunciate more detailed Technical Standards specific to that degree program. Programspecific standards may be found in the relevant degree program section of this catalog.

Requirement for Baccalaureate Degree

Consistent with Vanderbilt University policy governing professional degree programs, all VUSM degree program students are required to have been awarded the baccalaureate degree prior to matriculation.

Admitted students are required to provide official documentation of the baccalaureate degree prior to matriculation to all VUSM degree programs. Instructions for submitting documentation of the baccalaureate degree are available in the relevant degree program section of this catalog.

Requirement for Background Investigation

A criminal background check is required of all students prior to matriculation.

Upon notification of admission to a VUSM degree program, the student is provided information about how to complete the criminal background investigation. Program leadership reviews all items flagged on criminal background reports and may consult the ad hoc VUSM Criminal Background Check Committee for advice on any report. While individuals with flagged background reports are not automatically disqualified from enrollment in VUSM degree programs, Vanderbilt University and the School of Medicine reserve the right to withdraw an offer of admission to any individual with one or more disqualifying events on a criminal background report.

School Policy on Language Proficiency

Vanderbilt University School of Medicine requires its students to be proficient in the English language, both written and spoken. VUSM programs may establish admission requirements based on English-language proficiency, such as minimum TOEFL scores. Admission policies for individual programs are available in the relevant degree program sections of this catalog.

School Policy on International Students

School of Medicine degree programs may admit international students, but only programs with proper U.S. Department of Homeland Security approval may do so. To determine whether or not a particular VUSM degree program admits international students, please refer to the individual program section of this catalog.

An individual who possesses a United States Permanent Resident Card (a.k.a., a Green Card) is eligible to apply to all VUSM degree programs.

School Policy on Transfer Students

School of Medicine degree programs may admit transfer students, but not all programs do. To determine whether or not a particular VUSM degree program admits transfer students, please refer to the individual program section of this catalog. Policies regarding review of incoming transfer credits are contained in the VUSM academic policy section of this catalog.

School Policy on Visiting Students

School of Medicine degree programs may offer learning opportunities to visiting students from other institutions, but not all programs do. For more information about whether or not a particular VUSM degree program allows visiting students (and any application/admission requirements), please refer to the individual program section of this catalog. An affiliation agreement must be signed and in place before any domestic or international visiting student may study at Vanderbilt. Vanderbilt University School of Medicine has signed on to the AAMC Universal Clinical Training Agreement (UCTA) that was endorsed by the Liaison Committee on Medical Education. As a participant in this medical school registry, Vanderbilt requires only an implementation letter for any school that has signed on to the UCTA.

Academic Policies for All School of Medicine Programs

Degree Requirements

Students must successfully complete all applicable requirements in order to earn a degree from a VUSM program. All degree requirements must be completed within the maximum time allowed by the respective degree. Exceptions to the maximum allowable time-to-degree may be considered by the senior associate dean for health sciences education. Programs may require students to successfully complete examinations conducted by entities other than Vanderbilt University School of Medicine in order to graduate. Students who are not in good academic standing are not eligible to receive a degree. Also, Vanderbilt University requires that all balances due on student accounts be paid before a degree will be conferred and/or verified.

Toward the end of each student's study as part of a VUSM degree program, his/her academic record is audited by the VUSM Office of Student Records to ensure compliance with all degree requirements. Students who have met degree requirements are recommended to the dean for conferral of diplomas by the VUSM Executive Committee of the Executive Faculty each spring.

Each School of Medicine degree program establishes its degree requirements, within the parameters and requirements established by Vanderbilt University. Programs may require students to pass qualifying or other examinations specific to the field of study as a requirement for graduation, whether administered by Vanderbilt University or another institution. Students enrolled at Vanderbilt University School of Medicine must complete required course work at VUSM or a VUSM affiliate institution, unless otherwise explicitly indicated. Students must complete program requirements within the maximum amount of time allowed to complete the degree.

Enrollment, Course Registration, and Student Status

Enrollment Requirements. All VUSM students (including special students) are required to have been admitted to a degree program and to be enrolled at Vanderbilt University in order to register for and take VUSM courses. All full-time students must register each term with no breaks in registration to remain in good standing, except in cases of approved leave of absence. Students who fail to enroll for course work in a term in which leave of absence has not been approved are considered withdrawn and must apply for readmission.

Students pursuing dual degrees are required to designate enrollment in a primary degree program during each registration period. This may affect program scholarships, so students should be aware of such ramifications prior to pursuing a dual degree.

Academic Load and Credit Hours. The M.D. degree program is considered to be a full-time program and as such all students enrolled in that degree are classified as full-time students and are expected to adhere to the expectations of fulltime students. For programs other than the M.D., the academic load for full-time status in the fall and spring semesters is 8 or more hours. A student who wishes to carry more than 16 hours must secure authorization from the degree program director before registration. Three-quarter-time status is 6 to 7 hours; half-time status is 4 to 5 hours. The summer full-time load is 6 or more hours; three-quarter-time load is 5 hours, and halftime load is 3 to 4 hours. Eligibility for most federal financial assistance requires a minimum of half-time enrollment.

Credit hours are semester hours (e.g., a three-hour course carries credit of 3 semester hours). One semester credit hour represents at least three hours of academic work per week, on average, for one semester. Academic work includes, but is not necessarily limited to, lectures, laboratory work, homework, research, class readings, independent study, internships, practica, studio work, recitals, practicing, rehearsing, and recitations. Some Vanderbilt courses may have requirements that exceed this definition.

Course Registration. Students register for courses using the Vanderbilt University enrollment/registration system, called YES (Your Enrollment Services), at *yes.vanderbilt.edu*, unless individual programs or courses indicate otherwise. Course work must be completed during the term in which the student is registered, unless a student receives a grade of Incomplete for the course.

Changes in Registration. Changes to term-long courses are allowed only within the change period (the first ten days of the term). A student may formally withdraw from a course after the end of the change period with the permission of the faculty member, and a grade of W is given. Withdrawal from courses that do not run the full term are allowed until the mid-point of the course, and a grade of W is given. After the mid-point of the term, a student is not permitted to withdraw from the course except in rare instances of extenuating circumstances and with approval of the program director. Students should also be aware of financial ramifications of dropping a course after the change period.

Auditing a Course. Auditing is allowed in some programs, but not all. Program-specific sections in this catalog provide more information about whether a specific program allows courses to be audited.

In programs where auditing is allowed, a request must be submitted to and approved by both the program director and course instructor. Only students registered for regular courses are allowed to audit a course. Students who audit are expected to attend class regularly. The number of courses that a student is allowed to audit during a given term may be limited by the program director. Audits are recorded on the student's transcript. A grade of AW is entered onto a transcript when a student withdraws from an audited course after the change period (the first ten days of the term).

Special Students. Some, but not all, School of Medicine programs admit special, non-degree-seeking students. School of Medicine programs are not required to admit special students. Information about the special student policies of individual programs is available in the relevant degree program section of this catalog.

Special students admitted as non-degree-seeking students may register for selected courses. Students seeking special student status must submit an application to the program offering the course. Approval of the instructor and the program administration is required to take the course. Special students must meet the same admission requirements as the program's degree-seeking students. Registration for individual classes is contingent upon availability of space in the course.

Credit for Course Work Completed Away. Vanderbilt University School of Medicine has signed on to the AAMC Universal Clinical Training Agreement (UCTA) that was endorsed by the Liaison Committee on Medical Education. As a participant in this medical school registry, Vanderbilt requires only an implementation letter for any school that has signed on to the UCTA. For information about whether or not VUSM maintains an executed affiliation with a specific institution, please contact the VUSM Office of Student Records.

Transfer Credit. Only those courses for which a student has received a grade of B or its equivalent are considered for incoming credit transfer. In general, no more than 6 credit hours earned from an accredited institution may be applied toward degree graduation requirements. Applicants notify degree program directors, prior to admission, of their intent to petition for transfer credit. Transfer credit is approved at the discretion of the degree program director and then endorsed and processed by the director of student records for the School of Medicine. In some programs, students may petition for approval of additional credits. (See program-specific information pertaining to transfer credit in the appropriate program section of this catalog.) Credit is not given for courses taken in the Vanderbilt University Division of Unclassified Studies.

Credit for Courses Taken as an Undergraduate. Students may not request credit for course work taken prior to beginning the degree program if the course credit was used to satisfy requirements of the previous degree. Students wishing to transfer in graduate-level credit for previously completed course work must make such a request prior to admission to the program (see Transfer Credit above).

Leave of Absence. Students who wish to interrupt their study must request a leave of absence in writing from the associate dean for medical student affairs (M.D. program) or the program director (other VUSM degree programs). The dean/program director provides the student a written decision regarding the request. A one-time leave of absence may be granted for a maximum of one year for students seeking a master's or doctoral degree. On rare occasions a second leave of absence for a period of up to a year may be allowed for doctoral students.

Students taking a leave of absence are responsible for meeting with the associate dean for medical student affairs (M.D. program) or the program director (other VUSM degree programs) prior to the leave in order to plan for their course work and timeline for successful degree completion following their return. Students who do not register for classes before the final date of a leave of absence may be disenrolled and required to request reinstatement to the program. All programs have limits to the time within which all degree requirements must be completed, and it is the student's responsibility to be aware of these limits. Students are advised to consult the appropriate degree program section of this catalog for more information. Students should also discuss with VUSM Office of Enrollment Services and VU Office of Student Accounts staff the financial implications (i.e., tuition/fee charges and financial aid) of taking a leave of absence before moving forward with the process.

Withdrawal from the University. Students who wish to withdraw from the university for any reason must do so in writing to the associate dean for medical student affairs (M.D. program) or the program director (other VUSM degree programs). In some cases, the student may be able to receive a refund of tuition, but it is important that the student discuss this decision with VUSM Office of Enrollment Services staff before moving forward with the process. A student who has been dismissed from school, but decides to appeal the decision, is no longer able to choose to withdraw. If a student withdraws, reentry is possible only through the application process.

Attendance

Programs may require attendance at some or all activities. Such requirements are communicated to students in program documentation (e.g., this catalog, course syllabi, etc.). Also provided are requirements and procedures to request approval for and document absences, policies regarding maximum allowed absences, and requirements for making up learning activities/course work missed during absences.

A School of Medicine program may take appropriate administrative action in response to unexplained or unexcused student absence. For example, students may be placed on leave of absence or on temporary suspension.

Student Work/Extracurricular Activities

Student Duty Hours

In order to encourage a well-rounded, balanced journey through training, it is the policy of Vanderbilt University School of Medicine that duty hours of students should reflect the general guidelines set forth by nationally recognized accreditation organizations relevant to specific degree programs. Details regarding each program's expectations for student duty hours are included in the program-specific sections of this catalog.

Extracurricular Work or Activities

The School of Medicine does not regulate the outside work or activities of its students, although it does take the firm position of discouraging outside work. Outside commitments assumed by School of Medicine students must not compromise their responsibilities.

Students may not be paid for work performed as part of their elective or required course work for credit. Exceptions to this rule are made only when students are in special programs, such as students on military scholarships, students in funded graduate certificate programs, students in funded M.D./ Ph.D. programs, students in the MIDP program completing certain industry internships, and students in the Oral Surgery program when acting as residents.

Transportation

During their School of Medicine careers, students may be placed for educational experiences in sites located a distance from the Vanderbilt University campus. Students should be prepared to drive up to 35 miles from the Vanderbilt University campus to reach off-site placements. Students are responsible for their own transportation to and from all sites for educational experiences, including all costs associated with that travel.

Student Assessment and Grading

Grading Policies

The Doctor of Medicine program uses a grading scale different from that of the other VUSM professional degree programs. Details of the M.D. program grading scale are presented in the M.D. program section of this catalog.

For VUSM professional degree programs other than the M.D.:

Grade	=	Quality Points Per Hour	
A+	=	4.0	
А	=	4.0	
A-	=	3.7	
B+	=	3.3	
В	=	3.0	
B-	=	2.7	
C+	=	2.3	
С	=	2.0	
C-	=	1.7 (No earned hours. Quality hours and	
quality points only.)			
F	=	No credit	

Degree programs may choose not to use plus or minus letter grades. For any assignment, project, or activity, the course director retains discretion over the specific requirements and expectations which comprise the final letter grade.

Course work approved for transfer into a degree program carries earned hours, but not quality hours. Therefore, those courses are not computed in the grade point average.

Pass/Fail Grading. Some courses may be designated as pass/fail. The grades for these courses are not calculated into the GPA unless the final grade is F. Degree-seeking students may not elect to take a graded course as pass/fail. Non-degree-seeking students may be allowed by a program to elect to take a course pass/fail.

Incomplete. The grade I (Incomplete) may be used at the discretion of the instructor in those cases in which the student is not able to complete course work in the normal time. An I that is not replaced by a letter grade within one year may be changed to an F at the discretion of the instructor. Otherwise, the I may become permanent and remain on the transcript as such.

In Progress. The grade IP (In Progress) may be used at the discretion of the instructor as a temporary grade in those cases in which insufficient information is available to assign a final grade. The IP ultimately is replaced by a final, permanent grade.

A Grade of W. The grade of W is entered onto the transcript when a student withdraws from a course (or from the degree program) after the close of the change period (the first ten days of the term) but before the end of the term.

Grade Change Policy. A grade recorded in the University Registrar's Office (on a transcript) may be changed only upon the written request of the instructor with the approval of the appropriate program official. Requests for grade changes may be submitted, by the appropriate program official, to the School of Medicine Office of Enrollment Services. This policy includes changing an I to a final grade.

Grade Grievance Procedure. Students should seek redress of a problem with a grade as soon as possible after receiving the grade and in no case later than four weeks after the grade is released. Students with a problem should confer directly with the course director. Every effort should be made to resolve the problem fairly and promptly at this level. If the student cannot resolve the problem through discussion with the course director, the student should request in writing (email is acceptable) an appeal from the associate dean of medical student affairs (M.D. program) or the program director (other VUSM degree programs) within two weeks of talking with the course director. If the course director is also the degree program director, appeal would be made by the student to the assistant dean of health sciences education or his/her designee.

If resolution is not achieved by the associate dean for medical student affairs (M.D. program) or the program director (other VUSM degree programs), the case is referred to the senior associate dean of health sciences education or his/her designee, who make the final decision. At each level of review, the course's assessment practices is reviewed and the individual student's situation taken into account.

Student Progress and Promotion

Academic Progress and Promotion

School of Medicine degree program students are expected to progress academically through the program at a pace that ensures that students attain current and relevant professional knowledge, skills and attitudes. Students are expected to maintain satisfactory academic progress at all times. Each program establishes the normal time and maximum time allowed to progress though the program and complete the degree. Since grades are a significant element in determination of satisfactory academic progress, it is the student's responsibility to be aware of the minimum satisfactory grade level required for courses to be applied toward degree requirements. In addition, students are responsible for understanding experiential learning (clinical rotations, practica, etc.) requirements and minimum standards of performance (including semester GPA and cumulative GPA) required to maintain satisfactory academic progress in order to remain in good academic standing. (See each program's degree requirements and academic policies in the relevant degree program section of this catalog.)

Each student's progress is evaluated at least annually by an academic progress review committee. Committee name, size and membership varies by program, but all operate under the supervision of the School of Medicine and the policies contained in this catalog. Committees are populated by faculty members well versed in the program's degree requirements and in acceptable academic standards and performance for the program and its related profession.

Academic progress review committees review students' progress and may make the following determinations at each scheduled meeting:

- Satisfactory academic progress (Good standing and promotion)
- Satisfactory academic progress with concern/remediation (Good standing and promotion [or contingency for promotion])
- Academic probation unsatisfactory progress (Not in good standing—remediation required; promotion [or contingency for promotion])
- Dismissal (after failing to successfully remediate)

Students are notified in writing of the committee's determination if academic progress is deemed to be unsatisfactory. Degree programs' student support and advisory systems work with committees to facilitate the best possible outcome for all students.

For programs other than the M.D., a cumulative grade point average of at least 3.0 is required for graduation. A student should maintain a semester GPA of at least 3.0 to remain in good academic standing. A student whose cumulative GPA falls below 3.0 may be placed on probation for one semester. If at the end of the semester the grade point average is still below 3.0, the student may be dismissed from the program based on unsatisfactory academic performance. Students may withdraw in lieu of dismissal.

Repeating a Course

Students may be required to repeat a course after having received a grade below the level deemed acceptable for graduation credit by the degree program. In rare instances, in some programs, students may make a request of the program director to re-take a course if doing so would significantly benefit the student's academic performance and progress. Both courses are reflected on the transcript, but the second grade earned is the one used in computing the student's grade point average. Students should refer to their program policies for more information about whether the option to retake courses is available in the program.

Probation

Students placed on probation are notified through a letter from the associate dean for undergraduate medical education (M.D. program) or the program director (other VUSM degree programs) and/or the academic progress review committee that outlines the reasons for the probation; the requirements and recommendations for addressing deficiencies; the conditions for removal of probation, including an expected time frame; and actions that are taken if conditions are not met. Students placed on probation for any reason are required to complete a specific remediation plan that has been developed by the associate dean for undergraduate medical education (M.D. program) or the program director (other VUSM degree programs) in consultation with the academic progress review committee. The remediation plan may include requirements placed on the student, such as regular meetings with faculty/ advisers, elimination of extracurricular activities that may be interfering with satisfactory academic progress, etc.

All students on probation will be reviewed by the academic progress review committee at least once each term to determine the student's academic progress. At that time, the academic progress review committee may take the following actions:

- 1. Remove probation: Probation may be removed if the student has satisfactorily addressed deficiencies, even if this is before the time frame originally designated in the student's probation notification letter.
- 2. Continue probation: Progress is being made.
- 3. Recommend dismissal: Performance continues to be unsatisfactory.

Written notification is provided to the student regarding the outcome of this review.

Probation is considered an adverse action and may be reported in future graduation verifications and other requests for information. More information about how programs may report probation information is contained in the program-specific sections of this catalog, as well as in program information elsewhere online.

Appeal of Probation/Non-promotion

Students may request reconsideration of any decision for probation or non-promotion. The request must be made in writing within seven calendar days of receiving the decision from the program's academic progress review committee. Requests must be made to the associate dean for undergraduate medical education (M.D. program) or the program director (other VUSM degree programs). The student may meet with or present any additional information in writing to the senior associate dean for health sciences education, who reviews the information presented by the student, the degree program director, and the deliberations of the academic progress review committee. The SADHSE makes a determination to: 1) uphold the decision, 2) reverse the decision, or 3) request that the academic progress review committee meet for reconsideration of additional information. The SADHSE notifies the degree program director and the academic progress review committee in writing of his or her decision. In the case of a reversal, the SADHSE may require that the student follow requirements and/or recommendations of the academic progress review committee for addressing deficiencies.

Dismissal

Academic progress review committees will recommend dismissal for unsatisfactory academic progress only after a student has been given a reasonable probationary period (at least one term) to address deficiencies.

Dismissal may also be recommended at any time a student demonstrates a singular egregious behavior; involvement in one or more serious incidents inconsistent with the expectations for students at VUSM; violation of Vanderbilt University policy or that of VUSM educational/clinical affiliate institutions; or demonstrating a pattern of unprofessional behavior. In such cases, the associate dean for medical student affairs and/or the associate dean for undergraduate medical education (M.D. program) or the program director (other VUSM degree programs) and the academic progress review committee consider the situation, including its severity, as quickly as possible and render a recommendation to the School of Medicine dean or the dean's designee.

A decision to recommend dismissal requires participation of all academic progress review committee members, unless an exception is granted by the SADHSE. The committee will meet as soon as possible to consider the situation, including its severity, and render a recommendation. The student may meet with the associate dean for medical student affairs (M.D. program) or the program director (other VUSM degree programs) prior to any academic progress review committee meeting to present an explanation, including any mitigating circumstances. The associate dean for medical student affairs (M.D. program) or the program director (other VUSM degree programs) presents the student's explanation, as well as any mitigating circumstances, to the academic progress review committee. Alternately, the student may elect to appear before the academic progress review committee in person or to submit in writing his or her explanation and any other information to be considered by the academic progress review committee. A student may also ask a non-committee faculty member to offer information on behalf of him or her at the meeting.

If a recommendation for dismissal is made by the academic progress review committee, the associate dean for medical student affairs (M.D. program) or the program director (other VUSM degree programs) presents this recommendation to the dean or the dean's designee, which is normally the senior associate dean for health sciences education (SADHSE). The dean (or designee) takes into consideration any mitigating factors presented in writing by the student. The dean or designee shares his or her decision in writing (accepts dismissal or rejects dismissal) with the program's academic progress review committee. The dean or designee may reverse the recommendation, if he or she disagrees with the decision. If the dismissal decision is reversed, the academic progress review committee then considers whether probation or other action is appropriate under the guidelines above (see Probation).

If the dean/SADHSE affirms the recommendation of dismissal, the decision is described in a notice to the student written by the academic review committee chair and associate dean for undergraduate medical education (M.D. program) or the program director (other VUSM degree programs). This communication is presented to the student, in person whenever possible, by the associate dean for medical student affairs or associate dean for undergraduate medical education (M.D. program) or the program director (other VUSM degree programs). At that time, the dismissal decision and the following options are presented, in writing, to the student:

- 1. Voluntary withdrawal from VUSM. The decision to withdraw must be presented in writing by the student to the associate dean for medical student affairs (M.D. program) or the program director (other VUSM degree programs) within seven (7) calendar days after the student is informed of the decision for dismissal.
- 2. Dismissal. If the student does not request to withdraw within this seven (7)-calendar-day window, the dismissal takes effect on the eighth calendar day.
- 3. Appeal. Appeals must be made in writing to the SADHSE within seven (7) calendar days after the student is informed of the decision for dismissal. A student who requests an appeal forfeits the option to withdraw. The associate dean for medical student affairs (M.D. program) or program director (other VUSM degree programs) will serve as the student's information resource in the appeals process and will inform the associate dean for undergraduate medical education (M.D. program) or the assistant dean for health sciences education (other VUSM degree programs) and the SADHSE of the student's request for appeal.
- 4. If the student is unwilling or unable to meet with the associate dean for undergraduate medical education (M.D. program), the associate dean for medical student affairs (M.D. program), or the program director (other VUSM degree programs) regarding the dismissal decision, the student is informed of the decision in writing, and the window of time for the student to communicate his or her preference from the options listed above runs from the date of transmission of the written notice.

Appeal of Dismissal

A student who decides to appeal a decision of dismissal must submit a written request to the senior associate dean for health sciences education (SADHSE) within seven (7) calendar days of the dismissal decision. If a dismissal decision is appealed,

the student is placed on administrative leave and may not participate in patient care duties until the appeal is resolved. The dean or dean's designee, usually the SADHSE, assembles and convenes a review panel consisting of at least five (5) members of the School of Medicine Executive Committee of the Executive Faculty (from among them a chair is designated) for a hearing within thirty (30) calendar days of receipt of the written request from the student, unless the chair of the review panel determines that there are valid reasons to extend this time frame. In this review, the role of the dean or dean's designee is purely administrative, and he or she has no decision-making authority in this context. In preparation for the review, the associate dean for undergraduate medical education makes available any relevant information/documentation for the panel's review. The associate dean for medical student affairs (M.D. program) or the assistant dean for health sciences education (other VUSM degree programs) provides the student information about the appeal process. The student may choose to be present at the appeal review meeting and/or to make a presentation in writing. Information presented by the student may contain documentation from other students, faculty members, and/or other sources. The student is not allowed to have other representatives at the review. The chair of the degree program's academic progress review committee attends the review to present the findings of the progress review committee.

In the case of the M.D. program, the associate dean for medical student affairs will also attend the meeting to answer questions from the review panel. The review meeting is conducted without the presence of attorneys for either party. However, either party may consult with its own counsel prior to the review meeting or during any breaks that might take place during the meeting.

If the review panel upholds the decision, the student is dismissed without the opportunity to withdraw. If the review panel reverses the decision, the review panel provides the program's academic progress review committee with its written findings and refers to that committee for consideration of whether probation is appropriate for the student and, if so, determination of conditions that would accompany probation. The review is conducted without the presence of attorneys for either party. The decision of the review panel is final for the school.

Temporary Suspension

The School of Medicine reserves the right, through the SADHSE (or designee), to temporarily suspend a student for conduct disrupting or negatively impacting the learning environment, pending the student's referral to the degree program's academic progress review committee. The SADHSE notifies the student in writing of the conditions of the temporary suspension. If the student is reinstated, the student works with the associate dean for medical student affairs (M.D. program) or the program director (other VUSM degree programs) to address any course work missed during the suspension.

Program Evaluation

Note: The term "evaluation" is used to refer to the measurement of effectiveness of School of Medicine programs, not individual student performance. Focuses of evaluation in this

context may include the curriculum (courses and other learning activities), as well as faculty and administrators.

The purpose of evaluation at Vanderbilt University School of Medicine is to provide timely information that can be used to determine the effectiveness of programs' curricula and teaching and, ultimately, to determine whether programs are accomplishing their goals. Therefore, program evaluation supports continuous improvement of all program components. All VUSM students, faculty members, and staff members have a role in identifying needs and implementing strategies for improvement. For that reason, VUSM students may be required by degree programs to complete curriculum, program, and/or faculty/administrator evaluations.

Program evaluations examine the impact of overall curriculum and the interaction of its components and the learning environment on student learning. At VUSM, program evaluation activities include, but are not limited to:

- Course evaluations
- Rotation evaluations
- Overall program evaluations
- Faculty and administrator evaluations
- Data from student assessments (e.g., student course passage rates, rates of board exam passage, etc.)

A on Catalo Each VUSM program establishes its own evaluation strategy and methodologies. Various evaluation administration tools are used by different programs. More information about a specific program's evaluation strategies and tools may be found in program materials in this catalog, as well as elsewhere online. Data collected for evaluation purposes by all VUSM programs must be stored securely, and the privacy of those involved in evaluation protected appropriately and in accordance with relevant laws and regulations.

Student Compliance Requirements

All Vanderbilt University School of Medicine students are required to be in compliance with the rules and regulations that govern professional student education. In order to attain and/or maintain this compliance, students must provide information or complete compliance activities at various times throughout their VUSM careers. Students are contacted at appropriate intervals to make them aware of their responsibilities to meet these requirements and to notify them about the process for doing so. Specific requirements vary by degree program; more information about compliance requirements for each degree program are available from the program. Failure to complete the requirement by the stated deadlines results in the student's removal from educational activities.

Student Contact Information

The School of Medicine may need to reach students during their educational careers for any number of reasons, so students are required to maintain current contact information through YES, including mailing address, email address, and phone contact information. Each student should provide two phone numbers: his/her personal cell phone and a cell or landline phone of a family member contact for cases of emergency. Students are expected to update this information immediately when changes occur by logging in to YES (Your Enrollment Services) at yes. vanderbilt.edu and clicking on the Personal Information link.

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 a summer or fall semester may participate in Commencement the following May, and ordinarily the degree is conferred at the end of the term in which requirements are completed. Any student unable to participate in a Commencement ceremony receives his or her diploma by mail.

School of Medicine Tuition, Fees, and Financial Aid

Vanderbilt University Board of Trust

Tuition and fees are set annually by the Vanderbilt University Board of Trust and are subject to review and change without further notice.

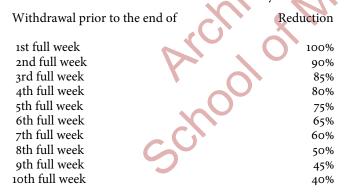
University and School of Medicine Policies

Tuition and Fees

Tuition and fee amounts for each program are listed in the corresponding program section of this catalog. Tuition, fees, and all other university charges incurred prior to or at registration are due and payment must be received by August 31 for the fall semester and January 2 for the spring semester (January 31 for the M.D. program). If courses are added *after* the initial billing period, it is the student's responsibility to contact the Office of Student Accounts for due dates and amounts related to tuition in order to avoid any holds and/ or late payment penalties. All other charges incurred after classes begin are due and payment must be received in full by the last business day of the month in which they are billed to the student. Additional information can be found at *finance. vanderbilt.edu/stuaccts*.

Refund of Tuition

Students who withdraw officially or who are dismissed from the university for any reason after the beginning of a term may be entitled to a partial refund in accordance with the schedule shown below. No refund is made after the tenth week in any term.



No refund after the 10th full week.

Late Payment of Tuition and Fees

All charges not paid by the specified due dates will be assessed a late payment fee of \$1.50 on each \$100 owed (minimum late fee of \$5). No transcript (official or unofficial) will be issued for a student who has an outstanding balance. Diplomas of graduating students will not be released until all indebtedness to the university is cleared.

Financial Clearance

Students may not be allowed to register for any term if they have outstanding unpaid balances for any previous term. No transcript, official or unofficial, is issued for a student who has an outstanding balance until the account has been paid. Diplomas of graduating students may be withheld until all bills are paid.

International students must provide documentation of having funds sufficient to meet all tuition, mandatory fees, and living expenses for the anticipated period of enrollment before a visa is issued. Information is provided by the university Office of International Student and Scholar Services.

Tuition Billing for Dual Degree Students

Students pursuing two degree programs are typically classified as being enrolled in only one degree program each semester. Tuition and fees are charged each term based on the degree program in which they are enrolled that semester.

Costs and Fees

2019/2020

The following university costs are included with tuition: Professional liability insurance, student long-term disability insurance (M.D. students only), student health service, and verifications.

The following university fees are assessed individually and separate from tuition:

Student service fees (M.D.—Annual fee)	\$582
Student service fees (Other VUSM programs	
—Fall/Spring semesters combined)	\$500
Student service fees (Other VUSM programs—Summer)	\$82*
Student health insurance (All programs)	\$3,650
Transcript fee (One time only; all programs)	\$100

*Shown student service fees (Other VUSM programs—Summer), above, is the amount charged for summer 2019 and is provided as a guideline. The amount to be charged in summer 2020 will be approved by the Vanderbilt University Board of Trust in April 2020. Actual charge for student service fees in summer 2020 may be different from above.

Student Service Fees

The required student service fees entitle students to use the facilities of Sarratt Student Center and the David Williams II Student Recreation and Wellness Center. The fees also cover admission to certain social and cultural events and subscriptions to certain campus publications. Specific information on these fees is published annually in the *Vanderbilt University Student Handbook*. By payment of an additional fee, students and their spouses may use their identification cards for admission to athletic events.

Professional Liability Insurance

School of Medicine students enrolled in programs that require clinical/patient care responsibilities are automatically covered with professional liability insurance, required of all enrolled students, at the time of registration. Details of the policy are available through the university student insurance office, and students are encouraged to familiarize themselves with these details and with their responsibilities in this regard.

Students are covered when they are completing required and elective learning activities related to their courses of study at the

Vanderbilt-affiliated hospitals (e.g., Vanderbilt University Medical Center or Nashville Veterans Administration Hospital) or elsewhere as a "visiting student," providing that (1) the clerkship or other educational experience has prior approval from the School of Medicine as course work for credit, (2) the activities within this experience are consonant with the student's level of training and experience and are performed under the supervision of appropriate faculty and/or staff, and (3) an academic/ clinical affiliation agreement has been executed by both Vanderbilt University and the host institution.

Long-Term Disability Insurance

M.D. students are automatically covered with long-term disability insurance, required of all enrolled medical students, at the time of registration. Details of the policy can be found at *medschool.vanderbilt.edu/financial-services/insurance*.

Student Health Insurance

All degree-seeking students registered for 4 or more hours at Vanderbilt are required to have adequate hospitalization 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 at *gallagherstudent.com/vanderbilt*. Additional information is also available at *finance.vanderbilt.edu/stuaccts/g_health.html*.

Student Health Service Costs

Student health service costs include required immunizations (and health screening tests.

Verification Costs

Verification costs cover all required verification processes including criminal background checks and drug screens.

Transcript Fee

All students entering Vanderbilt for the first time are charged a one-time transcript fee for official university transcripts, usually in the first semester of enrollment.

Financial Assistance

Approved educational expenses are met with funds from a combination of sources, including scholarships (from VU and non-VU sources) and student loans. Federal Direct Unsubsidized Loans and Federal Direct Graduate PLUS loans are two federal government loan programs that furnish a significant amount of support to VUSM students. Private loans are also available to international students. Additional information and applications for financial aid are online at *medschool. vanderbilt.edu/financial-services/*. Applicants desiring more specific information about financial aid resources should contact the School of Medicine Office of Student Financial Aid. (*medschool.vanderbilt.edu/financial-services/*)

Federal Financial Aid Satisfactory Academic Progress

Federal Satisfactory Academic Progress standards (SAP) used to determine eligibility for federal student aid are separate from academic policies that the School of Medicine may require for degree completion. Students must be meeting SAP standards, as defined by the Office of Student Financial Aid and Scholarships, to remain eligible for federal Title IV student aid. The SAP policies for the School of Medicine are available at *https://medschool.vanderbilt.edu/financial-services/*.

Financial Assistance for Dual Degree Students

Students pursuing two degree programs are typically classified as being enrolled in only one degree program each semester. Scholarship funds are awarded on the basis of that one degree program. Students may not receive scholarship funds for one degree program while enrolled in a separate VU degree program.

Vanderbilt University School of Medicine Institutional Scholarships

The following are School of Medicine Institutional Scholarships. The School of Medicine is grateful to its donors for their support.

THE JAMES T. AND OLIVIA R. ALLEN SCHOLARSHIP FUND was established in 1993 by Dr. James T. Allen, M.D. 1942, to provide financial support based on need for deserving students at the School of Medicine.

THE ALPHA KAPPA KAPPA SCHOLARSHIP FUND was established in 1969 by the Alumni Board of Directors of the Alpha Kappa Kappa fraternity to provide financial support for individual medical student needs, primarily through provision of funds to help meet tuition cost.

THE LUCILE R. ANDERSON SCHOLARSHIP FUND was established in 1991 by Dr. Lucile Russell Anderson, M.D. 1933, to provide financial support for deserving students at the School of Medicine.

THE SUE AND NELSON ANDREWS SCHOLARSHIP was established in 2001 by Nelson Andrews, B.A. 1950, and Sue Adams Andrews, B.A. 1951, to provide financial support based on need for students at the School of Medicine.

THE BAKER-LEONARD SCHOLARSHIP FUND was established in 2002 by Quentin B. Leonard to provide financial support for deserving graduate students at the School of Medicine.

THE SOJA PARK BENNETT M.D. SCHOLARSHIP was established in 2015 by Soja Park Bennett, M.D. 1968, to provide financial support based on need or merit for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE BRUCE B. DAN M.D. AND EUGENE AND MARGE BESPALOW SCHOLARSHIP FUND was established in 1985 by Bruce Dan, M.D. 1974, to provide financial support based on need for deserving students at the School of Medicine.

THE THOMAS M. BLAKE FUND was established by Thomas M. Blake, M.D. 1944, to provide financial support based on merit to worthy students at the School of Medicine.

THE DR. DANIEL B. BLAKEMORE FUND was established in 1987 through the bequest of Ms. Nell J. Blakemore to provide financial support based on need for deserving students at the School of Medicine.

THE POPPY PICKERING AND RICHARD D. BUCHANAN SCHOLARSHIP was established in 2011 by Poppy Pickering Buchanan, B.S.N. 1961, and Richard D. Buchanan, B.A. 1957, M.D. 1961, to provide financial support based on need or merit for deserving students at the School of Medicine.

THE BURRUS MEDICAL SCHOOL SCHOLARSHIP FUND was established in 1978 by George R. Burrus, B.A. 1952, M.D. 1955, Roger B. Burrus, B.A. 1950, M.D. 1957, Dr. William C. Burrus, former Vanderbilt student, and Swan B. Burrus, B.A. 1951, M.D. 1954, to provide financial support based on need for deserving students enrolled at the School of Medicine. THE GREER BUSBEE III SCHOLARSHIP was established in 1999 by Dr. and Mrs. Brandon Busbee to provide financial support based on need to deserving students at the School of Medicine.

THE CARLO-LEONARD SCHOLARSHIP was established in 2014 by Eugenia and Waldemar A. Carlo to provide financial support based on need or merit for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE THOMAS C. AND PAULINE C. BUTLER SCHOLARSHIP FUND was established in 1987 by Thomas Cullom Butler, B.A. 1930, M.D. 1934, to provide financial support based on need for deserving students at the School of Medicine.

THE CARELL FAMILY SCHOLARSHIP was established in 2012 by the children of James W. Carell to provide annual financial support for deserving students at the School of Medicine.

THE WILLIAM ROBERT CATE M.D. SCHOLARSHIP was established in his memory in 1996 by Dr. Robert D. Collins, Sr., and other family members, friends and colleagues to provide financial support for students at the School of Medicine.

THE JOHN E. CHAPMAN M.D. ENDOWED SCHOLARSHIP was established in 2001 by friends, colleagues and medical alumni to provide fulland partial-tuition financial support based on need and merit to students at the School of Medicine.

THE JOHN E. AND JUDY JEAN CHAPMAN SCHOLARSHIP was established in 2004 through the estate of Grace McVeigh, B.A. 1925, to provide financial support based on need for deserving students at the School of Medicine.

THE ALICE DREW CHENOWETH SCHOLARSHIP FUND was established in 1986 by Alice D. Chenoweth, M.D. 1932, to provide financial support for students at the School of Medicine.

THE 1943 SCHOOL OF MEDICINE CLASS SCHOLARSHIP DECEMBER FUND was established in 1992 by multiple donors in the School of Medicine Class of 1943, December, to provide financial support based on need for deserving students at the School of Medicine.

THE SCHOOL OF MEDICINE CLASS SCHOLARSHIP MARCH FUND was established in 1992 by multiple donors in the School of Medicine Class of 1943, March, to provide financial support based on need for deserving students at the School of Medicine.

THE 1946 SCHOOL OF MEDICINE CLASS SCHOLARSHIP FUND was established in 1996 by multiple donors to provide financial support for students at the School of Medicine.

THE CLASS OF 1947 SCHOLARSHIP was established in 1988 by multiple donors to provide financial support based on need for deserving students at the School of Medicine.

THE 1953 SCHOOL OF MEDICINE CLASS SCHOLARSHIP FUND was established in 2010 by multiple donors to provide financial support based on need for deserving medical students at the School of Medicine.

THE 1962 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2012 by multiple donors to provide financial support for deserving students at the School of Medicine.

THE 1963 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2012 by multiple donors from the Class of 1963 to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 1964 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 1989 by multiple donors to provide financial support for students at the School of Medicine.

THE 1965 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2013 by various donors to provide financial support based on need or merit for deserving students at the School of Medicine. THE 1967 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2011 by various donors to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 1968 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2013 through the bequest of Elise Moss Neeld, B.A. 1963, M.D. 1968, to provide financial support for students at the School of Medicine.

THE 1969 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2013 by various donors to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 1971 SCHOOL OF MEDICINE CLASS SCHOLARSHIP FUND was established in 2012 by various donors to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 1972 SCHOOL OF MEDICINE CLASS SCHOLARSHIP FUND was established in 2013 by various donors to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 1974 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2014 by various donors to provide financial support based on need or merit for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE 1975 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2010 by various donors to provide financial support based on need for deserving students at the School of Medicine.

THE 1976 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2012 by multiple donors to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 1978 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2007 by multiple donors from the Class of 1978 to provide financial support based on need for deserving students at the School of Medicine.

THE 1979 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2010 by multiple donors to provide financial support based on need for deserving students at the School of Medicine.

THE 1981 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2012 by multiple donors from the Class of 1981 to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 1982 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2011 by various donors to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 1984 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2014 by various donors to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 1986 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2011 by Rachel Lenox Mace, M.D. 1986, and Gerald F. Mace, J.D. 1985, to provide financial support based on need for deserving students at the School of Medicine.

THE 1987 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2012 by multiple donors from the Class of 1987 to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 1988 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2008 by multiple donors from the Class of 1988 to provide financial support based on need or merit for deserving students in the School of Medicine.

THE 1989 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2010 by multiple donors to provide financial support based on need for deserving students at the School of Medicine.

THE 1990 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2010 by multiple donors to provide financial support based on need for deserving students at the School of Medicine. THE 1991 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2012 by various donors to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 1992 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2012 by multiple donors from the Class of 1992 to provide financial support based on need or merit for deserving students at the School of Medicine.

THE DAVID FREEDY 1993 SCHOOL OF MEDICINE CLASS SCHOLAR-SHIP was established in 1992 by multiple donors to provide financial support based on merit for deserving students at the School of Medicine.

THE 1994 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2013 by multiple donors to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 1997 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2012 by multiple donors from the Class of 1997 to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 2001 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2012 by multiple donors from the Class of 2001 to provide financial support based on need or merit for deserving students at the School of Medicine.

THE 2009 SCHOOL OF MEDICINE CLASS SCHOLARSHIP was established in 2014 by various donors. The donors established the scholarship to provide financial support based on need or merit for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE SMILEY BLANTON SCHOLARSHIP FUND was established in 1973 through a bequest gift from Margaret Gray Blanton to provide scholarship support for students in the Department of Psychiatry at the Vanderbilt University School of Medicine.

THE ROBERT D. COLLINS M.D. SCHOLARSHIP FUND was established in 1996 by multiple donors to provide financial support for students at the School of Medicine.

THE COMMONWEALTH FUND SCHOLARSHIP ENDOWMENT was established by the Commonwealth Fund to provide financial support based on need for deserving students at the School of Medicine.

THE MARVIN B. AND MILDRED G. CORLETTE SCHOLARSHIP was established in 2003 by Marvin B. Corlette, B.A. 1930, M.D. 1933, to provide financial support for students at the School of Medicine.

THE LOUISE WILLIAMS COUCH MEMORIAL SCHOLARSHIP was established in 1962 by Dr. Orrie A. Couch to provide financial support for students at the School of Medicine.

THE DEBORAH AND C. A. CRAIG II MEDICAL SCHOLARSHIP FUND was established in 1992 by C. A. Craig II, B.A. 1951, and his wife, Deborah Wallace Craig, B.S. 1969, to provide financial support for talented and deserving students pursuing an M.D. degree at the School of Medicine.

THE W. ANDREW DALE M.D. AND CORINNE HOWELL DALE SCHOL-ARSHIP was established in 2017 by an anonymous donor. The donor established the fund to provide financial support based on need or merit for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE JACK DAVIES SCHOLARSHIP FUND was established in 1991 by multiple donors to provide financial support for medical students at the School of Medicine.

THE JOE C. DAVIS SCHOLARSHIP was established in 1986 by an anonymous donor to provide financial support based on need and merit for students at the School of Medicine.

THE J.T. AND MARY P. DAVIS SCHOLARSHIP FUND was established in 1996 by J.T. Davis, B.A.1928, M.D. 1931, to provide scholarship support to deserving students at the School of Medicine.

THE JOY AND JOHN W. DIDCOCT SCHOLARSHIP was established in 2017 through the estate of Joy C. Didcoct, G.N. 1938, and John W. Didcoct, B.A. 1933, M.D. 1937, to provide financial support based on need and merit for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE ANNETTE SCHAFFER ESKIND SCHOLARSHIP was established in 2011 by Annette Schaffer Eskind to provide financial support based on need or merit for deserving students at the School of Medicine.

THE HERBERT AND FLORENCE ESKIND MEMORIAL SCHOLARSHIP was established in July 1971 by Mrs. Herbert Eskind, A. 1928, and family to provide financial support based on need for deserving students at the School of Medicine.

THE ROBERT SADLER-WILLIAM EWERS SCHOLARSHIP FUND was established in 1987 by Mr. and Mrs. W. Fred DeLay to provide financial support for worthy students at the School of Medicine.

THE RICK V. N. FERRINI MEDICAL SCHOLARSHIP was established in 2018 by Divya and Vino Ferrini to provide financial support based on need or merit for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE J. F. FOX MEDICAL SCHOOL SCHOLARSHIP FUND was established in 1967 through the estate of Mrs. Hallie Fox to provide financial support based on need and merit for deserving students at the School of Medicine.

THE THOMAS F. FRIST, SR., M.D. SCHOLARSHIP was established in 2006 by Mr. and Mrs. H. Lee Barfield to provide financial support for deserving students at the School of Medicine.

THE GHERT-ROUSSEAU FAMILY SCHOLARSHIP FUND was established in 2010 by Michelle A. Ghert, M.D. 1996, to provide financial support for deserving medical students at the School of Medicine.

THE D. G. GILL SCHOLARSHIP FUND was established in 1982 by Gordon Nelson Gill, B.A. 1960, M.D. 1963, Richard Hamilton Gill, B.A. 1962, and Charles Leigh Gill to provide financial support based on need for deserving students at the School of Medicine.

THE FRED GOLDNER M.D. SCHOLARSHIP quasi account was established in 2013 to receive matching gifts from the Mary K. Parr Scholarship Matching Gift Program that was established to inspire donors to make a gift for scholarships at the School of Medicine.

THE DRS. FRANK LUTON AND CLIFTON GREER SCHOLARSHIP was established in 1995 through the estate of Clifton Greer, M.D. 1951, to provide financial support based on need for students at the School of Medicine.

THE HARRY J. GUFFEE SCHOLARSHIP FUND was established in 1991 by the Williamson Medical Center to provide financial support for deserving students at the School of Medicine.

THE SCOTT AND TRACIE HAMILTON SCHOLARSHIP was established in 2012 by the Pioneer Fund to provide financial support based on need for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE GLENN AND VIRGINIA HAMMONDS SCHOLARSHIP was established in 1984 by Dr. R. Glenn Hammonds, B.A. 1942, M.D. 1944, to provide financial scholarship support for deserving students at the School of Medicine.

THE FRANK M. HANDLEY MEDICAL SCHOOL SCHOLARSHIP was established in 1999 through the estate of Frank M. Handley, J.D. 1928, to provide financial support for students at the School of Medicine.

THE EMILY AND H. CAMPBELL HAYNIE SCHOLARSHIP was established in 2002 through a bequest from Harold Campbell Haynie, B.A. 1934, to provide financial support for deserving students at the School of Medicine.

THE JAMES HOLLORAN SCHOLARSHIP was established in 1990 by multiple friends and a family member from the Class of 1990 to provide financial support for deserving students at the School of Medicine.

THE HARRY R. JACOBSON M.D. AND JAN JACOBSON SCHOLARSHIP was established in 2004 through the estate of Grace McVeigh, B.A. 1925, to provide financial support based on need for deserving students at the School of Medicine.

THE ELIZABETH R. KEEFE AND DR. JACK KEEFE III HONOR SCHOLAR-SHIP was established through the estate of Elizabeth R. Keefe and Jack E. Keefe III, B.A. 1939, M.D. 1943, to provide financial support based on merit for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE HOLLIS E. JOHNSON AND FRANCES SETTLE JOHNSON SCHOL-ARSHIP FUND was established in 1990 by Dr. Hollis E. Johnson, M.D. 1921, to provide financial support for worthy students at the School of Medicine.

THE ERNEST G. AND MIRIAM H. KELLY SCHOLARSHIP FUND was established in 2008 by Dr. and Mrs. Ernest G. Kelly to provide financial support for students at the School of Medicine.

THE EARL A. AND FRANK B. KIMZEY SCHOLARSHIP was established in 1989 to provide financial support based on merit for deserving students at the School of Medicine. The bequest was realized in 2012 through the estate of Mrs. Frances K. Riley.

THE IKE J. KUHN SCHOLARSHIP was established in 1946 through the bequest of lke J. Kuhn to provide financial support for worthy students at the School of Medicine.

THE JOHN M. LEONARD M.D. SCHOLARSHIP was established in 2013 by the Baker Eye Institute to provide financial support based on need or merit for deserving students at the School of Medicine. Baker Eye Institute established the fund in honor of Dr. David L. Baker's mentor, John M. Leonard, M.D. 1967.

THE ANN LIGHT SCHOLARSHIP FUND was established in 1983 by Mrs. Ann Light to provide financial support for students at the School of Medicine.

THE DORIS M. AND FRED W. LOVE HONOR SCHOLARSHIP was established in 2015 through the estates of Doris M. Love and Fred W. Love, M.D. 1945, to provide financial support based on merit for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE CHARLES T. LOWE SCHOLARSHIP FUND was established in 2003 through the bequest of Charles T. Lowe, B.A. 1932, M.D. 1936, H.O. 1936, to provide financial support for students at the School of Medicine.

THE LUX SCHOLARSHIP FOR ORAL SURGERY was established in 1990 through the bequest of Konrad Lux, M.D. 1925, to provide financial support for worthy and qualified students in the graduate program of Oral Surgery at the School of Medicine.

THE LUX SCHOLARSHIP IN MEDICINE was established in 2009 through the bequest of Konrad Lux, M.D. 1925, to provide scholarship support to students at the Vanderbilt University School of Medicine.

THE THOMAS L. MADDIN M.D. FUND was established in 1944 through the realized bequest of Mrs. Sallie A. C. Watkins to provide financial support for male students at the School of Medicine.

THE JACK MARTIN SCHOLARSHIP FUND was established in 1989 by Murphy Baxter to provide financial support based on need for students at the School of Medicine.

THE MARGARET LOONEY MCALLEN SCHOLARSHIP was established in 2005 by Dr. C. Ashley McAllen, M.D. 1987, to provide financial support based on need for deserving students at the School of Medicine.

THE ROBERT L. AND BILLYE MCCRACKEN SCHOLARSHIP FUND was established in 2003 by Dr. Robert L. McCracken, M.D. 1939, to provide financial support for students at the School of Medicine.

THE PATRICIA AND EDWARD J. MCGAVOCK SCHOLARSHIP was established in 2000 through the bequest of Mrs. Patricia Warren McGavock to provide financial support for students at the School of Medicine.

THE CHARLES AND EDITH MCGILL SCHOLARSHIP FUND was established in 2000 through the trust of Dr. Charles M. McGill, M.D. 1935, and Mrs. Edith McGill to provide financial support for students at the School of Medicine.

THE BARTON MCSWAIN ENDOWED SCHOLARSHIP was established in 1994 by multiple donors to provide need-based scholarships to students at the School of Medicine.

THE BESS AND TOWNSEND A. MCVEIGH SCHOLARSHIP FUND was established in 1977 by Miss Grace McVeigh, B.A. 1925, to provide full-tuition, four-year financial support for needy and worthy students at the School of Medicine.

THE MEDICAL STUDENT SCHOLARSHIPS GIFT FUND was established by various donors to provide financial support for students at the School of Medicine.

THE H. HOUSTON MERRITT SCHOLARSHIP FUND was established in 1990 through the estate of Mabel Carmichael Merritt and Dr. H. Houston Merritt, B.A. 1922, to provide financial support for worthy students at the School of Medicine.

THE JAMES PRESTON MILLER SCHOLARSHIP FUND was established in 1960 by the bequest of Mr. James P. Miller to provide financial support for deserving students to obtain medical training at the School of Medicine at Vanderbilt University.

THE ANN MINOT ENDOWED SCHOLARSHIP was established in 1994 by multiple donors to provide financial support based on need for students at the School of Medicine.

THE BARBARA D. MURNAN MEMORIAL SCHOLARSHIP FUND was established by Barbara D. Murnan, B.A. 1934, to provide financial support based on merit for medical students specializing in cancer research or related fields at the School of Medicine.

THE COLEMAN D. OLDHAM HONOR SCHOLARSHIP FUND was established in 1997 through the liquidation of the Life Income Agreement of Coleman D. Oldham and his sister Emma C. Oldham to provide financial support based on merit for worthy students at the School of Medicine.

THE C. LEON AND JUDITH S. PARTAIN SCHOLARSHIP FUND was established in 1998 by Grace McVeigh, B.A. 1925, to provide financial support based on need for deserving students at the School of Medicine.

THE JONATHAN O. PARTAIN M.D. AND VIRGINIA G. PARTAIN SCHOL-ARSHIP was established in 2012 by Jonathan O. Partain, B.A. 1957, M.D. 1960, H.O./F.E. 1960, to provide financial support based on need or merit for deserving students at the School of Medicine.

THE ALICE AND V. K. PATTERSON SCHOLARSHIP was established in 2012 by David W. Patterson, B.S. 1981, M.D. 1985, and Linda S. Young, B.A. 1981, to provide financial support based on need or merit for deserving students at the School of Medicine.

THE HARVEY M. FLEET AND FRANK E. PHILLIPY SCHOLARSHIP was established in 2014 by Robert A. Johnson, M.D. 1957, to provide financial support based on need or merit for deserving students at the School of Medicine.

THE PIDWELL FAMILY SCHOLARSHIP FUND was established in 1999 by Mr. and Mrs. David W. Pidwell to provide financial support based on need for students at the School of Medicine.

THE ELIZABETH CRAIG PROCTOR SCHOLARSHIP was established in 2002 by Elizabeth Proctor to provide financial support for worthy medical students at the School of Medicine.

THE DARLINE AND ROBERT RASKIND SCHOLARSHIP was established in 2012 through the bequest of Doris Darline Raskind and Robert Raskind, M.D. 1938, to provide financial support for deserving students at the School of Medicine. THE THOMAS W. RHODES FELLOWSHIP was established in 1958 through the bequest of Georgianna C. Rhodes to support one or more fellowships at the School of Medicine.

THE RILEY SCHOLARSHIP was established in 1980 by members of the Riley family including Dr. Harris D. Riley Jr., B.A. 1945, M.D. 1948, Frank Riley, B.A. 1949, Richard F. Riley, B.A. 1946, M.D. 1948, and William G. Riley, B.A. 1943, M.D. 1945, to provide financial support based on need for deserving students at the School of Medicine.

THE CANBY ROBINSON SCHOLARSHIPS were established in 1986 to provide financial support for deserving students at the School of Medicine.

THE IKE AND ANN ROBINSON SCHOLARSHIP was established in 2018 through the trust of Dr. Roscoe "Ike" R. Robinson to provide financial support for students at the School of Medicine.

THE ROSCOE R. ROBINSON M.D. AND ANN ROBINSON SCHOLAR-SHIP was established in 1999 through a bequest from Grace McVeigh, B.A. 1925, to provide four-year financial support based on need for deserving students at the School of Medicine.

THE DAVID E. AND BARBARA L. ROGERS ENDOWED SCHOLARSHIP was established in 2003 by Mrs. Barbara Rogers to provide financial support based on need for deserving students at the School of Medicine.

THE ROMM FAMILY SCHOLARSHIP was established in 2016 by Richard E. Romm, H.O. 1970, to provide financial support based on need or merit for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE HELEN W. AND LOUIS ROSENFELD ENDOWMENT SCHOLARSHIP FUND was established in 1984 by Helen Rosenfeld, B.A. 1934 and Louis Rosenfeld, B.A. 1933, M.D. 1936, to provide financial support based on need for students at the School of Medicine.

THE GEORGE E. ROULHAC MEMORIAL SCHOLARSHIP FUND was established in 1995 through a bequest gift from Dr. George E. Roulhac, B.A. 1936, M.D. 1939, to provide financial support for students at the School of Medicine.

THE WILLETT H. "BUDDY" RUSH SCHOLARSHIP was established in 1987 by Martha H. Rush to provide financial support based on need for deserving students at the School of Medicine.

THE RICHARD M. SCOTT SCHOLARSHIP FUND was established in 1988 by multiple donors, including School of Medicine students, to provide financial support based on need for deserving students at the School of Medicine.

THE JOHN SECONDI SCHOLARSHIP FUND was established in 1987 by multiple donors to provide financial support based on need for deserving students at the School of Medicine.

THE JOHN N. SHELL ENDOWMENT FUND was established in 1980 by John N. Shell, M.D. 1928, and Marion S. Shell to provide financial support for worthy medical students at the School of Medicine.

THE ETHEL AND LOUIS SHIVITZ SCHOLARSHIP was established in 2012 by Ira Alan Shivitz, M.D. 1978, to provide financial support based on need or merit for deserving students at the School of Medicine.

THE DR. LESLIE M. AND EVELYN C. SMITH MEDICAL SCHOLARSHIP was established in 1998 by Evelyn Clark Smith, widow of Dr. Leslie McClure Smith, M.D. 1930, to provide financial support based on need for medical students at the School of Medicine.

THE DR. FRANK C. AND CONNIE EWELL SPENCER MEDICAL SCHOL-ARSHIP was established in 1997 by Frank Cole Spencer, M.D. 1947, and his wife, Connie Ewell Spencer, B.A. 1946, to provide financial support based on need for worthy students at the School of Medicine.

THE K. DOROTHEA AND JOSEPH G. SUTTON SCHOLARSHIP IN MEDI-CINE was established in 1995 through the bequest of Joseph Guy Sutton and Dorothea O. Sutton to provide financial support based on need for deserving students at the School of Medicine. THE HARLAN HOWARD TAYLOR SURGICAL SCHOLARSHIP FUND was established in 1987 by multiple donors including Dr. Harlan Howard Taylor, B.A. 1923, M.D. 1926, and his wife, Mrs. Elizabeth Parks Taylor, to provide financial support based on need for fourth-year students at the School of Medicine who are going into surgical fields.

THE BETTYE SUE AND JOHN C. THORNTON JR. SCHOLARSHIP was established in 2013 by John C. Thornton, Jr., B.A. 1937, M.D. 1940, to provide financial support for deserving students at the School of Medicine.

THE VANDERBILT MEDICAL SCHOOL SCHOLARSHIP FUND was established in 2001 by multiple donors to provide financial support based on need for deserving students at the School of Medicine.

THE ANDREW WM. WALKER M.D. SCHOLARSHIP was established in 2010 by Andrew William Walker, M.D. 1960, to provide financial support for deserving students at the School of Medicine.

THE IRENE GEORGIA BEDFORD WATERS SCHOLARSHIP was established in 2003 by Dr. William Bedford Waters, M.D. 1974, to provide financial support based on need for deserving students at the School of Medicine.

THE FRED C. WATSON MEMORIAL SCHOLARSHIP was established through the bequest of Malvina A. Watson to provide financial support based on need for deserving students at Vanderbilt University, including students at the School of Medicine.

THE JOE AND HOWARD WERTHAN FOUNDATION SCHOLARSHIP FUND was established in 1958 by the Joe and Howard Werthan Foundation to provide financial support based on need for students at the School of Medicine.

THE JONI P. WERTHAN SCHOLARSHIP was established in 2010 by Ms. Joni P. Werthan to provide financial support for one or more outstanding student(s) at the School of Medicine.

THE JAMES WHITAKER WEST SCHOLARSHIP was established in 2011 by Mrs. Ruth B. West, A. 1949, and Dr. John Thomas West, B.A. 1949, M.D. 1951, to provide financial support based on need or merit for deserving students at the School of Medicine.

THE DAVID HITT WILLIAMS M.D. MEMORIAL SCHOLARSHIP FUND was established in 1998 through a bequest gift from Ms. Eugenia Williams to provide financial support for worthy and deserving students at the School of Medicine.

THE WILLS SCHOLARSHIP was established in 2003 by Mr. and Mrs. Ridley Wills II through The Wills Foundation to provide financial support based on need for deserving students at the School of Medicine.

THE ROBERT JEWELL WILSON II AND SHARMAN MAURISSA JEWELL WILSON SCHOLARSHIP was established in 2007 by Mr. Robert J. Wilson to provide need-based scholarship support to deserving students at the Vanderbilt University School of Medicine.

THE DR. GUY T. GILLESPIE JR. AND TAY GILLESPIE SCHOLARSHIP was established in 2007 by Dr. Guy T. Gillespie, Jr., B.A. 1952, and Sarah A. 'Tay' Gillespie of Pinola, Mississippi to provide need-based scholarship support to deserving medical students enrolled in the Vanderbilt University School of Medicine.

THE CHARLES E. AND MILDRED WORK SCHOLARSHIP was established in 2001 by through the bequest of Charles E. Work, M.D. 1935, to provide financial support for deserving students at the School of Medicine.

THE DR. STEPHEN S. KUTNER SCHOLARSHIP was established in 2016 by Project Vision, Inc., on behalf of Jeanney Kutner and Stephen S. Kutner, M.D. 1965, to provide financial support based on need or merit for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE WILLIAM D. JOHNSTON M.D. MEMORIAL SCHOLARSHIP was established in 2016 by Linda H. Welborn, B.S. 1964, M.A. 1968, and William R. Welborn Jr., B.A. 1964, M.D. 1967, HO/FE 1967, to provide financial support based on need for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

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THE JUDSON G. RANDOLPH SCHOLARSHIP was established in 2016 by Susan E. Poirier and Tommy J. Poirier, M.D. 1967, to provide financial support based on need for a student at the School of Medicine.

THE KEITH NOLOP M.D. SCHOLARSHIP was established in 2016 by the Keith Nolop Irrevocable Trust to provide financial support based on need or merit for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE MELINDA AND JEFFREY BALSER M.D./PH.D. SCHOLARSHIP was established in 2010 by Melinda S. and Jeffrey R. Balser, M.D., Ph.D. 1990, to provide financial support for deserving students at the School of Medicine.

THE ESSERMAN FAMILY MEDICAL SCHOLARSHIP was established in 2013 by lvette C. and Charles H. Esserman to provide financial support based on need or merit for deserving M.D. or M.D./Ph.D. students at the School of Medicine.

THE GOODMAN FAMILY MEDICAL EDUCATION FUND was established in 2010 by the Mt. Brilliant Family Foundation to support educational scholarships to facilitate the training of leaders and scholars in medicine at the School of Medicine.

THE MARY AND WILLIAM O. INMAN, JR. SCHOLARSHIP FUND was established in 1985 by Grace McVeigh, B.A. 1925, to provide financial support for M.D./Ph.D. students at the School of Medicine.

THE MEADE HAVEN CHARITABLE TRUST M.D./PH.D. SCHOLARSHIP was established in 1977 by Jesse E. Wills to provide financial support for M.D./Ph.D. students at the School of Medicine who have made a serious career commitment to obtain advanced experience and training in research in the biomedical sciences.

THE ANN MELLY SUMMER SCHOLARSHIP IN ONCOLOGY was established in 1987 through the estate of Marian Ann Melly, Ph.D. 1969, to provide financial support for deserving medical students at the School of Medicine who are conducting research in the field of oncology.

THE BARBARA R. AND GLENN H. MERZ SCHOLARSHIP was established in 2010 by Barbara R. and Glenn H. Merz to provide financial support for deserving M.D./Ph.D. students at the School of Medicine.

THE HERBERT M. SHAYNE ENDOWMENT was established in 2003 by the Shayne Foundation to provide financial support for two M.D./Ph.D. students at the School of Medicine.

THE TRANSLATIONAL BIOCHEMISTRY ENDOWED RESEARCH AND SCHOLARSHIP FUND was established in 2010 by Janet and J. William Freytag to support research and scholarships at the School of Medicine. The fund will support a faculty member or student at the School of Medicine at Vanderbilt working in the area of translational biochemistry, with a primary focus in the area of matrix biology.

THE THOMAS HUGGINS WINN SCHOLARSHIP FUND was established in 1990 from the estate of Fanny Edith Winn to provide financial support for M.D./Ph.D. students at the School of Medicine.

Doctor of Medicine

Program Overview

Program Accreditation

Liaison Committee on Medical Education LCME Secretariat (AMA) American Medical Association 330 North Wabash Avenue Suite 39300 Chicago, IL 60611-5885 Phone: 312-464-4933 *LCME.org*

LCME Secretariat (AAMC) Association of American Medical Colleges 655 K Street NW Suite 100 Washington, DC 20001-2399 Phone: 202-828-0596 *LCME.org*

Standing Program Committees

Doctor of Medicine Admission Committees

The M.D. Program admission committees have the responsibility of reviewing medical school applications for admission and admitting those applicants considered most qualified for admission. Chairs and the Director of Admission oversee and continually review the entire admission process, recruit committee members, schedule and conduct training sessions for the committees, and organize and lead committee meetings. Chairs are named by the dean for five-year appointments.

The following admission subcommittees include diverse faculty, on rotating appointments, from across the Vanderbilt University School of Medicine who review applications in a holistic manner. Committee members' reviews and analyses are compiled and exchanged over a multi-step process.

Step 1—Screening Review Subcommittee: This subcommittee includes approximately 20-28 faculty members who screen primary and secondary applications to identify the candidates who will be reviewed by the Interview Review Subcommittee.

Step 2—Interview Review Subcommittee: This subcommittee includes approximately 24-30 faculty members who review and evaluate application materials to select the applicants to invite for interviews.

Step 3—Admission Committee: This committee includes approximately 18-24 faculty members and 10 to 12 current medical students, on rotating appointments, who review and evaluate all application materials, including interview reports, to provide a score that substantiates the determination of which candidates are offered admission.

Note: Doctor of Medicine Admission Bylaws are found at the end of the Doctor of Medicine chapter.

Undergraduate Medical Education Accreditation Standards Committee

Purpose: The UME Accreditation Standards Committee (UASC) is established to monitor ongoing compliance of the Vanderbilt University School of Medicine M.D. program with Liaison Committee on Medical Education (LCME) standards and elements.

Responsibilities: For LCME accreditation and continuous quality improvement requirements, UASC has the following responsibilities:

a. Continuously monitor compliance with all twelve standards and corresponding elements.

b. Identify standards and elements for which improvements are required to assure compliance.

c. With assistance from other faculty and staff members, develop formal quality improvement processes for these standards that include measurable outcomes.

d. UASC shall have the authority to assure that QI processes are iteratively implemented and outcomes are monitored, in order to achieve necessary results.

Reporting: UASC shall report to the Executive Faculty of VUSM, which is chaired by the dean of the School of Medicine. It provides annual reports to the Executive Faculty, with additional updates as needed. In addition, it provides intermittent reports to the senior leadership team of Vanderbilt University Medical Center, which reports to the dean of VUSM in his joint role as CEO of VUMC.

Membership: Chair: Donald W. Brady. Joey Barnett, André Churchwell, William B. Cutrer, Amy E. Fleming, Larry Marnett, David Raiford, Anderson Spickard III, Kyla Terhune.

Doctor of Medicine Phase Teams

Phase Teams consist of the course directors and major teachers responsible for implementation of the curriculum for each of the phases in medical school, as well as representatives of the Student Curriculum Committee and staff members working with the curriculum. The associate dean for undergraduate medical education and the Undergraduate Medical Education Executive Committee faculty chair coordinate the work of the Phase Teams to support the curricular quality improvement process.

Foundations of Medical Knowledge Team: Neil Osheroff, Cathleen C. Pettepher, Co-chairs. All block and longitudinal course directors serve on this committee. Ex officio: Donald W. Brady, William B. Cutrer, Amy E. Fleming, and Logan Key.

Foundations of Clinical Care Team: Ed Vasilevskis, Chair. All clerkship directors and longitudinal course directors serve on this committee. Ex officio: Donald W. Brady, William B. Cutrer, Amy E. Fleming, and Logan Key.

Immersion Team: Lourdes Estrada, Kendra Parekh, Co-chairs. Members of the Immersion Phase Working Group, along with Immersion course directors, serve on this committee. Ex officio: Donald W. Brady, William B. Cutrer, Amy E. Fleming, and Logan Key.

Doctor of Medicine Student Promotion Committees

The dean or the dean's designee (usually the senior associate dean for health sciences education [SADHSE]), appoints a Promotion Committee to each of three phases of training (FMK, FCC, Immersion Phase). Promotion Committees meet regularly to review the progress of individual students and the aggregate progress of the cohort of students in its assigned phase. Each promotion committee has the responsibility for making recommendations to the dean and the executive faculty concerning promotion, remedial action, or dismissal as appropriate for each student in the class/phase for which it is responsible.

Each committee consists of at least seven faculty members who represent a variety of clinical and basic science departments, as well as the broad diversity of the School of Medicine community. Each member serves a four-year term, with staggered terms.

The SADHSE appoints a faculty chair for each committee, and the associate dean for undergraduate medical education (ADUME) oversees the promotion committee process. The chair of each committee may determine whether members must be physically present or may participate remotely for any given meeting. A quorum of the Promotion Committee consists of at least four of the voting members of a committee; however, any proposed dismissal requires the participation of all voting members, unless an exception is granted by the SADHSE. The associate dean for medical student affairs (ADMSA), the ADUME, the assistant dean for medical student assessment (ADA), and the senior associate dean for diversity in medical education, are non-voting ex officio members of each committee.

Immersion Phase

Leslie Gewin, Chair. Rachel Forbes, Jay Jerome, Matt McEvoy, Ingrid Meszoely, Kevin Niswender, Lorraine Ware. Ex Officio: André L. Churchwell, William B. Cutrer, Amy E. Fleming, Cathleen C. Pettepher.

Foundations of Clinical Care Phase

Brian Drolet, Chair. Kecia Carroll, William (Bill) Cooper, Joyce Johnson, Ela Knapik, James S. Powers, Consuelo Wilkins. Ex officio: André Churchwell, William B. Cutrer, Amy E. Fleming, Cathleen C. Pettepher.

Foundations of Medical Knowledge Phase

Jennifer Blackford, Chair. Rob Carnahan, Daisy Ceiner, Shubhada Jagasia, Kevin Johnson, Keith Meador, Kurt Smith, John York. Ex officio: André L. Churchwell, William B. Cutrer, Amy E. Fleming, Cathleen C. Pettepher.

Doctor of Medicine Undergraduate Medical Education Committee

The Undergraduate Medical Education Executive Committee (UMEC) is composed of members of the School of Medicine leadership appointed by the dean to include key faculty leaders from multiple departments, the phase team leaders, and leaders of longitudinal elements, led by a faculty chair of the committee, also appointed by the dean. (Details of committee membership are outlined in the UMEC charter.)

Ex officio members include the senior associate dean for health sciences education, the associate dean for undergraduate medical education, the associate dean for medical student affairs, the associate dean for diversity, the assistant dean for assessment, the assistant dean for educational informatics and technology, the director of clinical skills development, and the director of program evaluation. There is also student representation on this committee

UMEC is advisory to the dean, and, along with the dean, it holds authority for central oversight of the UME curriculum. UMEC meets every other month. Meetings are devoted to course approval/evaluation, program evaluation, thread evaluation, and/or educational policy. The agenda is determined jointly by the faculty chair of the committee and the associate dean for UME. The committee has the option of convening additional meetings as needed.

The UMEC for the current academic year is chaired by James Atkinson and consists of faculty representatives from basic science and clinical departments.

Note: Doctor of Medicine UMEC Bylaws are found at the end of the Doctor of Medicine chapter.

Medical Innovators Development Program (MIDP) Internal Advisory Council

The MIDP Internal Advisory Council provides strategic planning and program oversight for all aspects of theprogram. This committee meets once or twice each year. The council is composed of experts from across the Vanderbilt University Medical Center, the Vanderbilt University School of Medicine, the Vanderbilt University School of Engineering, and the Owen Graduate School of Management.

Medical Innovators Development Program (MIDP) Leadership Team

The MIDP Leadership Team is appointed annually by the dean to assist in the admission process and provide program oversight and strategic planning. Each applicant for the MIDP is initially screened, in a Skype interview, by several members of this team. The on-site interview process includes a combination of one-on-one discussions with applicants and a unique team-based Design Challenge, which serves to identify highly qualified candidates to be approved by the Admission Committee.

Reed Omary, Director; Trent Rosenbloom, Associate Director. André Churchwell, Ali Coffey, Lourdes Estrada, Michael King, Lindsey Moloney, Brent Savoie, and Melanie Schuele. A student member is appointed to the leadership team each year.

Medical Scientist Training Program (MSTP) Admission Committee

The MSTP Admission Committee (MAC) is appointed annually by the dean to assist in the admission process and provide program oversight and strategic planning. Each applicant for the MSTP is interviewed individually by several members of the MAC, which serves to identify highly qualified candidates to be approved by the Admission Committee. The MAC includes several institutional leaders and senior scientists with responsibility for M.D. and Ph.D. training.

Christopher S. Williams, Director; Lourdes Estrada, Ambra Pozzi, Danny Winder, Sally York. Associate Directors; Megan A. Williams, Assistant Director. Ronald Alvarez, R. Daniel Beauchamp, Bruce D. Carter, James Cassat, Jin Chen, Lea Davis, Maria Hadjifrangiskou, Patrick Hu, Gretchen Purcell Jackson, Meenakshi Madhur, Pierre Massion, W. David Merryman, Sachin Patel, Jeffrey Rathmell, Dan M. Roden, Edward Sherwood, Michelle Southard-Smith, Digna Velez Edwards, Lorraine Ware, John York, Roy Zent. Student Members: Gabriella DiCarlo, Stephanie Dudzinski, Krystian Kozek, and Kevin Graepel. Ex officio: Joey Barnett, Donald W. Brady, G. Roger Chalkley, André Churchwell, William B. Cutrer, Amy E. Fleming, and Cathy Fuchs.

Medical Scientist Training Program (MSTP) Senior Oversight Committee

The MSTP SOC meets annually and provides guidance to the MSTP leadership on program evaluation, student progress, strategic planning, and alignment with institutional initiatives.

The committee membership includes the MSTP Leadership Team and G. Roger Chalkley, Chair. Donald W. Brady, William B. Cutrer, Amy E. Fleming, and Lawrence J. Marnett.

Quantitative and Chemical Biology Executive Committee

The Quantitative and Chemical Biology (QCB) Executive Committee is responsible for evaluating and admitting students to the QCB, which is a doctoral training program designed for those interested in pursuing research at the interface of chemical, physical, and biological sciences. The Executive Committee reviews the progress of the first-year graduate students in the program before recommending students to the graduate programs of Biochemistry, Biological Sciences, Cancer Biology, Cell and Developmental Biology, Chemical and Physical Biology, Chemistry, Human Genetics, Mathematics, Microbe-Host Interactions, Molecular Pathology and Immunology, Molecular Physiology and Biophysics, Neuroscience, Pharmacology, and Physics. Based on their field of research, students are welcome to pursue doctoral scholarship in the School of Medicine, the College of Arts and Science, and the School of Engineering.

Hassane Mchaourab, Chair. Raymond Blind, Beth Bowman, Alan Brash, Todd Peterson, David Weaver, and Marija Zanic.

Interdisciplinary Graduate Program Executive Committee

The Interdisciplinary Graduate Program Executive Committee is concerned with graduate student affairs and graduate programs in the Medical Center. It is responsible for admitting students to the Interdisciplinary Graduate Program in the Biomedical Sciences; for recommending candidates for fellowships and other funds available for the program; and for reviewing activities and progress of the students in the program and recommending students to the Departments of Biochemistry, Biological Sciences, Cell and Developmental Biology, Microbe-Host Interactions, Molecular Pathology and Immunology, Molecular Physiology and Biophysics, and Pharmacology and to the graduate programs in Cancer Biology, Chemical and Physical Biology, Human Genetics, and Neuroscience for the completion of the Ph.D.

James G. Patton, Chair. Manuel Ascano, Beth Bowman, G. Roger Chalkley, Barbara Fingleton, Brad Grueter, Lauren Jackson, Sebastian Joyce, Ethan Lee, Richard M. O'Brien, Douglas Ruderfer, Brian Wadzinski, Andries Zijlstra.

Major Learning Facilities

The primary location for M.D. program classrooms, the student lounge, and first-year student lockers, as well as Vanderbilt University School of Medicine administrative offices, is the Annette and Irwin Eskind Family Biomedical Library and Learning Center (EBL).

This home for the School of Medicine occupies the second, third, and fourth floors of EBL. It provides a state-of-the-art learning environment, with versatile physical spaces and innovative technology; comfortable, modern gathering spaces for both formal and informal student activities; and a bright, airy working environment for M.D. students and School of Medicine faculty and staff. EBL is located on the same campus as Vanderbilt University Medical Center.

VUMC houses educational sites for the M.D. program as well. Rudolph A. Light Hall provides a venue for select learning and co-curricular activities for the M.D. program. Clinical learning experiences take place throughout VUMC and the Veterans Administration Hospital.

Major VUMC buildings are located within close walking distance to EBL, while away-from-campus locations are in other parts of Nashville and Davidson County.

More information about VUMC facilities is available in the Principal Clinical Education Affiliates section of this catalog.

Students enrolled at Vanderbilt University School of Medicine must complete required course work at VUSM or at an institution with which VUSM has an executed affiliation agreement, unless otherwise explicitly indicated. (See Clinical Educational Affiliates in School of Medicine Academic Policies and Credit for Course Work Completed Away in School of Medicine Academic Policies, above.)

Competencies for Learners Across the Continuum

The following set of core competencies was adopted by the Undergraduate Medical Education Committee in 2009, updated in July 2012, and re-affirmed at the 2018 Annual Curriculum Summit. These competencies represent goals for medical education across the continuum, and while it is expected that students will be able to demonstrate some degree of mastery in all of them by the time of graduation, it is not expected that all graduating students will be expert in all of them. These core competencies are based on the six ACGME competencies that guide learning throughout postgraduate medical education.

I. Medical Knowledge

Physicians must understand established and evolving biological, clinical, epidemiological, and social-behavioral sciences and must be able to apply this knowledge to patient care. Learners will be able to:

- MK1. Explain the biological, behavioral, and social factors that promote health or predispose individuals to illness, and how these may be used in partnership with patients to predict, prevent or mitigate the onset of disease.
- MK2. Demonstrate deep knowledge of the sciences essential for one's chosen field of practice.
- MK3. Demonstrate knowledge of the sciences that support other specialty fields as they relate to one's own practice.
- MK4. Demonstrate knowledge of the sciences underlying the common and important health and wellness issues affecting our society and other societies around the globe.
- MK5. Demonstrate an appreciation for the importance of the sciences that underlie the effective practice of medicine and the resulting commitment to maintain an up-to-date fund of knowledge through continuous learning.
- MK6. Apply knowledge of the scientific method, reproducible research, and experimental design in evaluating questions of interest.
- MK7. Collect, analyze, and interpret new information to enhance knowledge in the various disciplines related to medicine.

II. Patient Care

Physicians must consistently provide care that is compassionate, culturally competent, safe, efficient, cost sensitive, appropriate, and effective for the treatment of illness and the promotion of health. Learners will be able to:

- PC1. Perform a problem-focused or complete history and physical examination as indicated, and to obtain necessary diagnostic studies, including imaging, laboratory, and procedural tests.
- PC2. Interpret clinical information and formulate a prioritized differential diagnosis that reflects the use of medical knowledge in a probabilistic reasoning process.
- PC3. Formulate a management plan based on evaluation of the scientific evidence as well as on the patient's values, cultural background, beliefs, and behaviors; critically review the literature with an understanding of the levels of evidence provided by typical experimental or study designs, measurement techniques, and analyses; recognize common forms of bias.
- PC4. Implement a comprehensive management plan that would include performing indicated procedures within the scope of one's training
- PC5. Utilize knowledge support tools such as evidencebased diagnostic criteria, management guidelines and point-of-care information resources.
- PC6. Utilize informatics and health information technology in support of patient care in a manner that reflects understanding of their capabilities, limitations, benefits, and risks. Examples include the electronic health record, computerized physician order entry, decision support systems, and messaging systems.

- PC7. Demonstrate clinical judgment that is safe and commensurate for the level of training.
- PC8. Re-examine and address prior decisions when desired outcomes are not achieved and/or the patient is dissatisfied.

III. Interpersonal and Communication Skills

Physicians must be able to communicate in ways that result in safe, culturally sensitive, effective, and respectful information exchange and create beneficial partnerships with patients, their families, and other health professionals. Learners will be able to:

- ICS1. Discuss the enduring value of effective relationships and the factors that can facilitate or impede their formation, including power imbalances and social, economic, and cultural differences.
- ICS2. Demonstrate sensitivity to the diversity with which people perceive, think, learn, communicate, and make decisions, both individually and in groups, and an understanding of how these processes might be impacted by illness.
- ICS₃. Explain the elements of a validated providerpatient communication model, and demonstrate appropriate components of the model during patient interactions.
- ICS4. Discuss the strengths, limitations, and appropriate applications of various communication modalities, and utilize verbal, non-verbal, written, electronic, graphic, synchronous, and asynchronous modalities in appropriate ways.
- ICS5. Discuss the challenges and opportunities created by cross-cultural communications and their potential impact on patient care, health disparities and health outcomes, and engage support systems that facilitate cross-cultural communication.
- ICS6. Discuss the elements of effective team building and utilize appropriate techniques to create, participate in, and lead effective teams.
- ICS7. Establish and utilize effective communication strategies with patients, families, and healthcare colleagues, regardless of their cultural background.
- ICS8. Build and sustain effective relationships in a wide variety of settings and with persons from diverse backgrounds.
- ICS9. Effectively manage interpersonal conflict and provide and receive constructive feedback.
- ICS10. Disclose medical error to patients, families, and health care providers in a manner that is truthful, sensitive, responsible, constructive and supportive.

IV. Professionalism

Physicians must possess the knowledge, skills, and attitudes necessary to carry out professional responsibilities, adhere to ethical standards and establish and maintain productive, respectful relationships with patients and colleagues. Professionalism applies to formal and informal interactions in education systems, in health care practice settings, and in the wider community. Learners will be able to:

- PR1. Discuss the duties and obligations of the medical profession, its health care institutions, and its individual practitioners to patients, communities, and society.
- PR2. Place the primacy of the patient in all health care endeavors.

- PR3. Work for a more just health care system, including the ability to advocate effectively on behalf of individual patients and patient populations.
- PR4. Discuss the principles of biomedical ethics and apply these principles in practical contexts.
- PR5. Demonstrate honesty and transparency in all dealings with patients, learners, and colleagues.
- PR6. Comply with the professional and legal standards that safeguard patient confidentiality.
- PR7. Discuss the concepts surrounding conflict of interest and competing priorities; identify and manage these in ways that maintain the primacy of patient interests and the health of the public.
- PR8. Demonstrate compassion and respect for all persons regardless of differences in values, beliefs, and experiences.
- PR9. Demonstrate awareness of the vulnerability of patients and the inherent power differentials in organizational and interpersonal relationships, and respect the boundaries that define therapeutic relationships.
- PR10. Seek excellence in all professional endeavors.

V. Practice-Based Learning and Improvement

Physicians must be able to continuously improve patient care by investigating and evaluating outcomes of care and by engaging in learning activities which involve critical appraisal and assimilation of scientific evidence and application of relevant knowledge to individual patients and populations. To demonstrate competence in practice-based learning and improvement, each learner will be able to:

- PBLI1. Systematically collect, monitor, and analyze data describing current performance at the individual, team and/or systems levels in an effort to achieve the highest possible quality of care.
- PBLI2. Continuously pursue knowledge regarding best practices and optimal patient outcomes.
- PBLI3. Compare data about current performance at the individual, team, and/or systems level with expected outcomes, and identify and implement the learning strategies needed to improve performance.
- PBLI4. Develop and implement improvement projects using a systematic approach that employs the principles of improvement science.
- PBLI5. Recognize, acknowledge, and analyze medical errors and devise system-based strategies that would prevent similar errors in the future.

VI. Systems-Based Practice

Physicians must understand and respond to the larger context and system of health care and effectively call on system resources to provide care that is of optimal value. Learners will be able to:

- SBP1. Explain why health care of optimal value is safe, effective, patient-centered, culturally sensitive, timely, efficient, and equitable.
- SBP2. Explain basic principles of systems science and the ways in which people, processes, technology, and policy combine to form systems.
- SBP3. Describe the basic organization of health care systems, including the various relationships between patients, providers, practices, institutions, insurers and benefits managers, community health organizations,

federal and state regulators, accrediting bodies, professional organizations, licensing boards, the pharmaceutical and biotechnology industries, and legislators.

- SBP4. Compare and contrast the local systems in which acute patient care and health maintenance are provided, such as emergency departments, outpatient clinics, hospitals, mental health clinics, public health clinics, pharmacies, etc.; coordinate patient care within these systems.
- SBP5. Describe different health professionals' roles and responsibilities within the health care delivery system and maximally utilize the capabilities of all health care team members to achieve optimal patient outcomes.
- SBP6. Discuss the key elements of leadership, management, and organizational behavior and how these elements apply in teams, health care organizations, and society; demonstrate these in one's own leadership roles.
- SBP7. Describe how public health and health policy shape the nature of our health care system and discuss how and when clinicians must interact with public health officials and policymakers.
- SBP8. Explain risk, complexity, resilience, and related concepts that influence the performance of humans and the systems in which they work.
- SBP9. Design, analyze, and evaluate health care microsystems, and propose interventions that improve quality, safety, and cost-effectiveness.

Special Doctor of Medicine Programs

Medical Scientist Training Program

The Medical Scientist Training Program is the dual degree M.D./Ph.D. program at VUSM. The central goal of the MSTP at Vanderbilt University is to identify, mentor, and foster the careers of a diverse workforce of superior future leaders in academic medicine, industry, and government who are dedicated to improving human health through research, clinical activities, and leadership. Based on solid clinical training and rigorous, highly impactful research training, our program fosters the development of independent scientific careers. We provide students with an integrated curriculum comprising a strong core education in medicine and intensive training in scientific inquiry. Successful completion of the program leads to both the M.D. and Ph.D. degrees.

MSTP Financial Support

Funding for tuition and a stipend is provided for those who gain admission to the Medical Scientist Training Program. A training grant from the NIH supports about 19 percent of the expenses for the MSTP; the remainder comes from institutional support and philanthropy. Students who do not maintain good academic standing risk losing this financial support.

Medical Innovators Development Program

The Medical Innovators Development Program (MIDP) is a unique four-year Ph.D.-to-M.D. training program tailored to engineers and applied scientists with existing Ph.D. degrees. The purpose is to fill an unmet need for applied physicianengineers who can solve clinical problems by translating discoveries in engineering into valuable innovation that improves the lives of our patients. Motivated innovative physician-engineers who understand clinical medicine, as well as biomedical design, are critical to achieving more than incremental change. The MIDP is the School of Medicine's first step in a broader mission to bridge the gap between academia, industry, and health.

MIDP students constitute a small cohort of students in the M.D. program. The program emphasizes multidisciplinary collaboration with faculty expertise across the schools of medicine, engineering, and business.

MIDP Financial Support

Funding for tuition is provided for those who gain admission to the Medical Innovators Development Program. Continued funding is predicated on maintaining satisfactory performance in the M.D. and MIDP programs.

Oral and Maxillofacial Surgery—Doctor of Medicine Program (OMS-MD)

The Vanderbilt University Medical Center offers an Oral and Maxillofacial Surgical (OMS) Residency Program that, in collaboration with Vanderbilt University School of Medicine, allows qualified individuals to complete a Vanderbilt University M.D. in three years and thereafter progress directly into the VUMC OMS residency. The Vanderbilt University Oral and Maxillofacial Surgical Residency Program and VU M.D. program accept one student each year to this program. The OMS-MD curriculum allows trainees to meet graduation requirements for the doctor of medicine at the end of three years, at which point the Vanderbilt University M.D. is conferred. During the last three of six years in the OMS-MD program, the trainees continue full time in the VUMC OMS residency program.

With a case-based, system-based learning model and personalized medical school curriculum, there are generous opportunities for the OMS resident-medical student to explore areas of personal interest and emphasis programs for an outstanding medical/surgical education. The program prepares residents for the community practice of oral and maxillofacial surgery as well as for advanced fellowship training and academic careers. Areas of clinical strength include the comprehensive management of all facets of facial trauma, benign and malignant head and neck pathology, orthognathic surgery, facial reconstruction, secondary cleft care, and dentoalveolar surgery and implants with an emphasis on implant site development.

Admission to the Doctor of Medicine Program

Technical Standards for the Doctor of Medicine

The Vanderbilt University School of Medicine Admission Committee affirms that all candidates for the M.D. must possess the intellectual, physical, and emotional capabilities necessary to undertake the required curriculum in a reasonably independent manner, without having to rely on intermediaries, and that all students must be able to achieve the levels of competence required by the faculty to complete medical school and enter residency and clinical practice. Candidates for the M.D. must have abilities and skills in the following areas: observational skills; communication skills; motor skills; intellectual, conceptual, integrative, and quantitative skills; and behavioral and social skills. Technological compensation can be made for some limitations in certain of these areas, but candidates must be able to perform in a reasonably independent manner. The use of a trained intermediary is not allowable as this shifts the reliance of candidates' judgment from their own observation and prioritization to that of another.

Candidates must have sufficient sensory and motor function to independently gather information from patients by physical examination and observation. All candidates should be expected to perform basic laboratory tests (blood and urine analysis, etc.), execute diagnostic procedures (lumbar puncture, venipuncture, etc.), and interpret ancillary diagnostic data (EKGs and X-rays). Candidates should be able to provide general care and emergency treatment to patients. Examples of emergency treatment reasonably required of physicians are cardiopulmonary resuscitation, the administration of intravenous medication, the application of pressure to stop bleeding, the opening of obstructed airways, the suturing of simple wounds, and the performance of simple obstetrical maneuvers. Such tasks and actions require equilibrium, the coordination of gross and fine muscular movements, and functional use of the senses.

These guidelines were formally adopted by the Vanderbilt University School of Medicine Undergraduate Medical Education Executive Committee and are reviewed annually.

Implementation of Technical Standards in the Admissions Process. All applicants for admission to the Vanderbilt University School of Medicine will be evaluated according to the same standards and criteria outlined in the Technical Standards. Although these standards serve to delineate the necessary physical and mental abilities of all candidates, they are not intended to deter any candidate for whom reasonable accommodation will allow the fulfillment of the complete curriculum.

Implementation of Technical Standards during Degree **Candidacy.** Should a candidate have or develop a condition that would place patients, the candidate, or others at risk or that may affect his/her need for accommodation, an evaluation with an appropriate medical provider followed by assessment through the Vanderbilt University Student Access Services office would be needed to provide recommended accommodations to the School of Medicine. The associate dean for undergraduate medical education (ADUME) and the assistant dean for medical student assessment (and, if needed, the senior associate dean for health sciences education) would review the student assessment and requested accommodations carefully. A complete and careful reconsideration of all the skills, attitudes, and attributes of each candidate will be performed. This includes an assessment of his/her willingness, desire, and ability to complete the medical curriculum and fulfill all requirements for medical licensure, and will be informed by the knowledge that students with varied types of disabilities have the ability to become successful medical professionals.

Technical Standards

Observational Skills

Candidates must assimilate essential information as presented through demonstrations and experiences in the basic sciences. In addition, candidates must be able to:

• Observe a patient accurately and acquire relevant health and medical information, including written documents, images from the medical literature, slides and/or video.

• Interpret X-ray and other graphic images, and digital or analog representations of physiologic data (e.g., EKGs).

The required observation and information acquisition and analysis necessitate the functional use of visual, auditory, and somatic sensation. In any case where a candidate's ability to observe or acquire information through these sensory modalities is compromised, the candidate must demonstrate alternative means and/or abilities to acquire essential observational information.

Communication Skills

Candidates must be able to demonstrate proficiency in the English language such that they can communicate effectively in oral and written form with all members of the health care team. Candidates must be able to communicate with patients in order to elicit information. They must have the capacity for comfortable verbal and non-verbal communication and interpersonal skills, to enable effective caregiving of patients and collaboration within a multidisciplinary team. In any case where a candidate's ability to communicate is compromised, the candidate must demonstrate alternative means and/or abilities to communicate with patients and teams.

Motor Skills

It is required that candidates possess the motor skills necessary to complete and interpret the physical findings of patients. Such actions may require coordination of both gross and fine muscular movements, equilibrium, and functional use of the senses of touch. In any case where a candidate's ability to complete and interpret physical findings because of motor skills is compromised, the candidate must demonstrate alternative means and/or abilities to retrieve these physical findings.

Intellectual-Conceptual Skills

Candidates must exhibit the requisite intellectual and conceptual skills to effectively interpret, assimilate, and understand the complex information required to function within our medical school curriculum. Effective participation in learning modalities, such as individual, small group, and lecture formats, in both the classroom and the clinical setting, will be required. Candidates must be able to effectively learn, participate, collaborate, and contribute as a part of a team. They will need to synthesize information effectively both in person and via remote technology. Candidates must be able to interpret causal connections and make accurate, fact-based conclusions based on available data and information. They must be able to formulate a hypothesis, investigate the potential answers and outcomes, and formulate appropriate and accurate conclusions.

Cognitive Skills

Candidates must be able to measure, calculate, reason, analyze, integrate, and synthesize. In addition, the candidate must be able to comprehend three-dimensional relationships and to understand the spatial relationships of structures. Problem solving, a critical skill demanded of physicians, requires all of these intellectual abilities. Candidates must be able to perform these problem-solving skills in a timely fashion.

Behavioral Attributes, Social Skills, and Professional *Expectations*

Candidates must be able to fully utilize their intellectual abilities, to exercise good judgment, to promptly complete all responsibilities attendant to the diagnosis and care of patients, and to develop mature, sensitive, and effective relationships with patients. Candidates must be able to effectively handle and manage heavy workloads and to function effectively under stress. They must be able to adapt to changing environments and to learn to function in the face of uncertainties inherent in the clinical problems of patients. Candidates must care for all individuals in a respectful and effective manner regardless of gender, age, race, sexual orientation, religion, or any other protected status identified in the university's Non-Discrimination Policy. Professionalism, compassion, integrity, concern for others, interpersonal skills, interest, and motivation are all qualities that are expected throughout the educational processes.

Any concerns about the content or application of these technical standards should be referred to the School of Medicine director of admissions, or the School of Medicine associate dean for medical student affairs.

Content current as of May 11, 2019.

Doctor of Medicine Requirements for Entrance

The Vanderbilt University Doctor of Medicine program seeks students with a strong background in both science and liberal arts who have the baccalaureate degree before matriculation. The Medical College Admission Test (MCAT) is required and used along with other observations to predict success in preclinical course work.

Vanderbilt University School of Medicine recognizes that the undergraduate academic experience of applicants varies greatly. Therefore, we have made the decision to move away from "requirements" to "recommendations." The expansive and ever-changing landscape of medicine and its practice necessitates that an applicant have demonstrated competencies in the natural and life sciences, social sciences, and mathematics. These competencies can be met through traditional and/or newly-established interdisciplinary courses of study in an accredited institution of higher learning. The use of AP or other credit is acceptable, but it is strongly encouraged to build stronger competencies through courses taken in college. Although there is no timeframe in which students must meet the above competencies, it is recommended that students have recent exposures to most or all of these areas. Competitive applicants should demonstrate in-depth competency in each of the following areas of study, based on the AAMC-HHMI Scientific Foundations for Future Physicians and AAMC-Behavioral and Social Science Foundations for Future Physicians. Mastery of competencies is reflected by a strong performance in the classroom and on the MCAT, as well as in letters of evaluation.

Biology: Applicants should demonstrate competence in the understanding of molecular and cellular biology, genetics, and how they regulate organ and organismic structure and function. Fields of study analyzing diverse human properties are viewed in a strong, positive light.

Chemistry/Biochemistry: Applicants should demonstrate competence in the basic principles of chemistry as it pertains to living systems. Studies in biochemistry are an exemplary way to prepare students for training in medicine science.

demonstrate competence in the basic principles of physics and mathematics underlying living systems. Applicants should demonstrate basic competence in statistics or biostatistics, which is important to understand the quantitative aspects of medicine and biomedical research.

Social Sciences and Communication: It is imperative that the applicant demonstrate competence in the humanistic understanding of patients as human beings and as part of a familial and social structure. In this regard, studies in psychology and sociology are viewed favorably. It is required that the applicant speaks, writes, and reads English fluently.

The faculty of the Vanderbilt University School of Medicine recognizes its responsibility to present candidates for the M.D. degree who have the knowledge and skills to function in a broad variety of clinical situations and to render a wide spectrum of patient care. Candidates for the M.D. degree ordinarily have the broad preliminary preparation to enter postgraduate medical education in any of the diverse specialties of medicine.

Doctor of Medicine Recommendations for Entrance

A broad experience in non-science courses is encouraged, especially experience beyond the introductory course level in areas such as English, the humanities, the arts, and the social and behavioral sciences. A major in non-science courses does not affect selection.

Medical College Admission Test

The Medical College Admission Test is given under the auspices of the Association of American Medical Colleges and is required of applicants to Vanderbilt. It is given multiple times each year. Since the examination score is used by medical schools in the selection of applicants, candidates should take the test in the spring prior to the time application is submitted, if possible. Results of the September examination are acceptable, but delay review of the application until scores are received.

Doctor of Medicine Selection Factors

Vanderbilt University School of Medicine seeks to matriculate a diverse group of academically exceptional students whose attributes and accomplishments suggest that they will be future leaders and/or scholars in medicine. To accomplish this goal, VUSM provides a review of each candidate by multiple members of the faculty who are broadly representative of the faculty body. The committee uses a holistic approach to evaluate an array of applicant attributes, including academic excellence, personal characteristics, accomplishments in research, leadership, service to others, contribution to diversity (gender, race, ethnicity, sexual orientation, socio-economic background, geographic origin), and participation in extracurricular activities.

Medical Scientist Training Program (MSTP-MD/PhD) Admission

MSTP students come from a diverse applicant pool drawn from throughout the nation and abroad. MSTP applicants should possess:

- 1) an excellent academic record;
- 2) a strong motivation to pursue a career as a physician-scientist;
- 3) previous research experience outside of required laboratory courses; and
- 4) leadership qualities.

Medical Innovators Development Program (MIDP) Admission

MIDP applicants must have a doctoral degree in engineering or applied sciences, with evidence of academic excellence. The doctoral program must be completed prior to matriculation. If conferral of the doctoral degree will not take place until after matriculation, a letter from the registrar or dean of the institution awarding the degree stating that all degree requirements have been met (including approval of dissertation) is required before matriculation.

All course recommendations applicable to the Doctor of Medicine program apply to MIDP applicants as well. Please refer to the requirements outlined for the Doctor of Medicine program.

Oral and Maxillofacial Surgery—Doctor of Medicine Program (OMS-MD) Admission

One candidate per year is admitted to the program. Applicants must have passed Part 1 and Part 2 of the National Dental Board Examination; must have earned a D.M.D./D.D.S. degree or equivalent, and must be a U.S. citizen or a permanent resident.

In addition, all applicants to the OMS-MD program are required to take the CBSE (Comprehensive Basic Science Examination) administered by the NBME. This examination is taken during or just prior to their final year of dental school.

The selection factors for applicants emphasize past academic performance; personal attributes such as a sound work ethic, dedication, and honesty; and a demonstrated commitment to postgraduate training in oral and maxillofacial surgery. The latter may be demonstrated through completion of one or more OMS externships, preferably of at least two (2) weeks' duration. Letters of recommendation are required and specified by the PASS application information for this program. Such letters are very carefully reviewed and should be provided by dental school faculty who can share personal knowledge of the applicant's qualifications, commitment, personal attributes, and accomplishments.

Application Procedure for Admission to the Doctor of Medicine Program

As a convenience to the applicant, Vanderbilt University School of Medicine participates in the American Medical College Application Service. All application materials may be obtained online through AMCAS by going to *www.aamc.org.* Applications are received online by AMCAS any time after 1 June and before 1 November preceding the anticipated enrollment date the next year.

The Screening Review Subcommittee evaluates the initial application materials. The Interview Review Subcommittee evaluates AMCAS, secondary application, and letters of recommendation to decide which applicants are invited for an interview. Interviews are conducted at Vanderbilt between September and February. The Admission Committee evaluates the application materials and interview reports to decide which applicants are invited to join the entering class. Invitations to join the class are made in December and February.

Vanderbilt does not participate in the Early Decision Program through the American Medical College Application Service and does not have an Early Assurance Program. Vanderbilt University School of Medicine offers various dual degree programs. Application is made to each program separately, and admission to both programs is required to enter a dual degree program. A criminal background check is required after admission to the Doctor of Medicine program and must be received by the school before matriculation.

Disclosure of offenses post-background check completion: Current full-time students are required to immediately report to the ADMSA or the ADUME any arrest, criminal charge, or conviction occurring after their background checks have been completed. Required disclosure also includes, but is not limited to, allegations, investigations, and/or disciplinary action from any licensing board or Abuse scan.

Application Procedure for Medical Innovators Development Program Admission

The MIDP admission process is the same as that for the M.D. program except as outlined below.

Like traditional M.D. applicants, MIDP applicants submit letters of recommendation. However, one should be from a research mentor or work supervisor who can describe the applicant's potential for and commitment to success as an applied physician scientist.

In addition to the three essays submitted through the AMCAS application, MIDP applicants must submit an MIDPfocused essay explaining the reason(s) the applicant is interested in joining the Medical Innovators Development Program and how the MIDP program helps the applicant achieve his or her career goals. (~500 words)

Further screening of secondary applications is done via a Skype interview. Successfully screened candidates are then invited to the on-site interview/Design Challenge. The MIDP Leadership Team has the responsibility of reviewing and ranking MIDP applications for presentation to the VUMS Admission Committee. No candidates are offered MIDP acceptance without the approval of the Admission Committee.

Application Procedure for Oral and Maxillofacial Surgery—Doctor of Medicine Program Admission

Applications are accepted through the American Dental Education Association Postdoctoral Application Support Service (ADEA PASS) (*www.adea.org/pass*). Applications are accepted from among only US citizens and US permanent residents.

Applications are due by September 1 each year. Interview invitations are sent directly to selected candidates for September and October interviews. After interviewing, residents are matched via the Postdoctoral Dental Matching Program (*natmatch.com/dentres/*).

The following materials are required, and must be uploaded to your PASS application:

- 1. 2x2 Passport style photo
- 2. NBDE Score report (part 1, and part 2 if you have taken it)
- 3. CBSE Score report

A \$35 dollar supplemental application fee is required. Please see the OMFS admission website for more information on applying, at *ww2.mc.vanderbilt.edu/deptoralmaxilsurgy/28918*.

One OMS-MD trainee is admitted annually through the OMS residency selection process. The OMS department recommends the selected candidate to the School of Medicine Admission Committee. The Admission Committee reviews the applicant's credentials and makes an M.D. program admission determination.

Application Procedure for MSTP (M.D./Ph.D.) Admission

A single application is made to the M.D./Ph.D. program by indicating M.D./Ph.D. degree on the AMCAS application to Vanderbilt University School of Medicine and completing the MSTP secondary application. The application is reviewed by the MSTP admission committee. Competitive applicants are invited by the MSTP to interview at Vanderbilt. Applications to the MSTP can be received from individuals who have accepted a position in the incoming class of the School of Medicine or who are currently enrolled in the M.D. program. Students in the first year of Ph.D. training may also be considered for admission. The final acceptance for all Doctor of Medicine programs rests with the Admission Committee. More information may be found at *medschool.vanderbilt.edu/ mstp/admission-process.*

Application to Other Dual Degree Programs

Vanderbilt University School of Medicine offers various dual degree programs. Application is made to each program separately, and admission to both programs is required to enter a dual degree program.

Transfer Students

Transfer students are not accepted into the Doctor of Medicine Program at the Vanderbilt University School of Medicine.

Non-degree-seeking Students

Non-degree-seeking students are not allowed to enroll in Doctor of Medicine course work offered by the School of Medicine.

Visiting Students (General Information)

Vanderbilt School of Medicine welcomes visiting senior medical students, space permitting, into clinical electives. The visitor must be an enrolled fourth-year medical student in good academic standing at a U.S. medical school. Each approved student must be taking the elective for credit from his/her own school with his/her dean's approval and must have adequate professional liability and health insurance coverage. In addition, the visitor must submit immunization records which are reviewed by Vanderbilt University Student Health services. The visitor must be deemed compliant by Student Health before being cleared to rotate in a clinical setting. In addition, the visitor must show proof of a criminal background check conducted within 12 months of the rotation. Visitors must also have taken and passed the NBME Step 1 exam.

Visiting students may take ACE electives in the School of Medicine, space permitting, with the approval of the appropriate department and with concurrence of the course instructor and the associate dean for medical student affairs. Visiting students should not contact the course directors directly. All inquiries must be made through the Office of Enrollment Services. Failure to apply through this office may result in the student's not being able to take the course.

Students wishing to visit at Vanderbilt School of Medicine should submit a Visiting Student Application through the AAMC Visiting Student Application Service (VSAS). Applications are processed up to twelve weeks in advance of the requested rotation. For more information on VSAS, visit *aamc. org/vsas* or contact *vsas@aamc.org*. Applications are accepted beginning on March 15. A complete application includes a picture, CV, USMLE Step 1 Score, transcript, immunization form, and federal criminal background check report. All accepted students must confirm their participation by submitting a non-refundable \$160 processing fee by check or money order payable to Vanderbilt University School of Medicine. Visitors are also required to participate in an orientation with the Office of Enrollment Services on the first day of their rotation which includes training sessions in Bloodborne Pathogens, Standards of Conduct and HIPAA. Visiting students may not enroll for more than eight weeks of elective work at Vanderbilt without special approval. Complete information about the Visiting Student Program is online at *medschool.vanderbilt.edu/visiting-medical-students/*.

Meharry Medical Students

The Vanderbilt School of Medicine has an alliance with Meharry Medical College which allows Meharry medical students to take electives at Vanderbilt, space permitting, at no additional cost. Applications must be submitted through the VSAS application program in the same manner as for other medical students (outlined above).

Osteopathic Students

Students from osteopathic medical schools may apply to Vanderbilt University School of Medicine through VSAS. The same process applies as for medical students (outlined above). Osteopathic students are also required to submit a nonrefundable processing fee of \$160 upon approval and placement in an elective course. Not all specialties at Vanderbilt University School of Medicine accept osteopathic students.

International Visiting Students

Vanderbilt School of Medicine accepts a finite number of international visiting medical students during November through April each year. International students are eligible for this program if:

- There are available spaces in existing courses;
- The student is in his or her final year of medical school;
- The student demonstrates proficiency in English as

evidenced by the TOEFL score or has been taught in English;The student has been nominated by an institution with

whom Vanderbilt has an existing collaboration or by a clinical faculty member at Vanderbilt who already has a professional relationship with the student.

International visiting students must pay a \$250 registration fee and \$750 per elective. The elective fee is waived for students at the University of Jordan with which Vanderbilt has a reciprocal relationship.

Information on the program is on the website at *medschool.vanderbilt.edu/visiting-medical-students/ visiting-international-students/*.

An affiliation agreement must be signed and in place before any domestic or international visiting student may rotate at Vanderbilt. Vanderbilt University School of Medicine has signed on to the AAMC Universal Clinical Training Agreement (UCTA) that was endorsed by the Liaison Committee on Medical Education. As a participant in this medical school registry, Vanderbilt requires only an implementation letter for any school that has signed on to the UCTA.

Degree Requirements for the Doctor of Medicine

In order to graduate with the doctor of medicine, all M.D. students must:

- Have satisfactorily completed the medical curriculum.
- Have attained or acquired all required programmatic competencies.
- Have taken Step 1, Step 2 Clinical Knowledge (CK) and Step 2 Clinical Skills (CS) of the United States Medical Licensing Examination by the following deadlines: waivers must be approved by ADMSA or ADUME
 - o Have taken Step 1 prior to orientation week of the Immersion phase.
 - o Have taken Step 2CK and Step 2CS by February 1 of their 4th year/final year of medical school.
- Have no outstanding unpaid balances with the university, other than sanctioned educational loans.

LENGTH AND DELIVERY OF PROGRAM

In accordance with the requirements of the Liaison Committee on Medical Education, candidates for the M.D. must have spent at least 130 weeks of study as matriculated medical students. The maximum time for enrollment in required M.D. course work is six years, including time spent on approved personal and/ or medical leave(s) of absence. Time spent on leave of absence related to an approved alternate academic pathway (e.g., pursuing another degree, completing a research year, etc.) does not count toward the six-year maximum time to complete the M.D.*

Any student who exits the M.D. curriculum for approved experiences (research, dual degrees, leave of absence, etc.) encounters different course options upon return. Requirements for these students are aligned with expectations in the year of entry by applying the closest equivalent experiences available. Such students must meet with the associate deans of medical student affairs and undergraduate medical education to clarify requirements for their degrees.

MSTP

The MSTP is a dual endeavor between the Vanderbilt University School of Medicine and the Vanderbilt University Graduate School. Trainees are required to fulfill all of the requirements for both the M.D. and the Ph.D. Since some competencies for the M.D. are met by the graduate school experience, it is possible for MSTP students matriculating July 2013 or after to complete the M.D. program in a total of three years. The MSTP allows both dual and alternating enrollment in the School of Medicine and the Graduate School. MSTP students will typically complete the FMK and FCC phases, exit for graduate studies, then return for a single year in the Immersion Phase.

The cornerstone of the Vanderbilt MSTP is training in scientific inquiry afforded by a rigorous Ph.D. experience. After completing the first two years of medical school and at least two laboratory rotations, trainees select a laboratory and department for graduate studies. This selection is typically formalized before the end of the second year of medical school.

Requirements for successful completion of the Ph.D. are the same for all students at Vanderbilt, and the Ph.D. thesis must be successfully defended prior to reentry into medical school. Most MSTP students will begin their final year of medical school in early July or earlier to complete the Immersion phase of their training.

Medical Innovators Development Program

In addition to the degree requirements for the Doctor of Medicine, MIDP candidates complete the following:

- Over all four years:
 - Innovation Forums
 - Right Brain Activities

During the second year:

Innovation Activism

During the third year:

• Innovation Design Experience and Applications (IDEA)

During the fourth year: • Industry Immersion

During the third and fourth year: • Business and Entrepreneurship

OMS-MD Program

Students in the OMS-MD program meet in full the requirements for the doctor of medicine after three years of full-time training.

DOCTOR OF MEDICINE CURRICULUM REQUIREMENTS (AKA CURRICULUM 2.0)

Foundations of Medical Knowledge Phase (FMK–Year 1)

This phase of the curriculum (53 weeks) provides students a strong foundation in the basic sciences, humanities, and behavioral and social sciences that supports ongoing developmental learning over ensuing years. All students participate in meaningful clinical work during this phase to initiate their development as professionals, to provide clinical relevance for the foundational course work, and to provide an early understanding of health care systems.

Required courses include Foundations of the Profession; Human Blueprint and Architecture (HBA); Microbes and Immunity (MI); Homeostasis; Endocrine, Digestion and Reproduction (EDR); Brain, Behavior and Movement (BBM); Physical Diagnosis (PDx); Learning Communities (LC)—FMK; CASE (Inquiry Program); and Continuity Clinical Experience (CCX) for either Foundations of Healthcare Delivery (FHD)1 or Vanderbilt Program in Interprofessional Learning (VPIL) track.

Foundations of Clinical Care Phase (FCC-Year 2)

This phase (41 weeks) provides a strong foundation in clinical care delivery, including core clerkships, clinical electives, and longitudinal programs to support the development of clinical skills and clinical reasoning.

Clerkships. Students rotate through discipline-specific clinical clerkships including Surgery (8 weeks), Medicine (8 weeks), Pediatrics (6 weeks), Obstetrics-Gynecology (6 weeks), Neurology (4 weeks), and Psychiatry (4 weeks).

Ordinarily, students complete all clerkships before proceeding to the Immersion phase, but under special circumstances, students may defer one or more clerkships to pursue specific research or clinical interests. Such plans must be approved by the associate dean for undergraduate medical education. MSTP students who enter the FCC phase after the first clerkship block may defer one block to the Immersion phase, with the permission of the Medical Scientist Training Program program director and the ADUME. These students remain accountable for the longitudinal elements of the FCC phase.

Electives. All students are required to take two (2) twoweek electives during the FCC phase. These experiences are designed to allow students to explore focused clinical areas and potential career choices. Students may select from offerings across many clinical disciplines. The scheduling of these electives is linked to the clerkship blocks in Pediatrics and in Obstetrics and Gynecology.

A student may request an exemption from the elective requirement if she/he has a compelling reason. Reasons may include a need to make up clerkship time, illness requiring treatment, or other unavoidable life events that require the student to be away from school. When the student needs an exemption, she/he must contact the associate dean for medical student affairs (ADMSA) to make a formal request. The decision to grant the exemption is made by the ADMSA. Once an exemption is granted, the student maynot be required to complete the elective at a later date. An exempted elective that is not made up at a later time does not appear on the transcript.

Master Clinical Teacher (MCT) Program. Direct observations by a master clinical teacher are required during the FCC phase. MCTs observe students during patient encounters and provide immediate feedback and teaching of advanced clinical skills. The structure and expectations of the observations are consistent throughout the phase; however the logistics and scheduling of observations are specific to each clerkship. Participation in the MCT process is mandatory and contributes to the clerkship grade and portfolio.

Diagnosis and Therapeutics (D&T). This required course runs longitudinally throughout the phase. The course begins with a one-week intensive review of diagnostic approaches and continues throughout the FCC phase with a series of small group meetings aligned with specific clerkships.

Ongoing Longitudinal Elements. The longitudinal elements (Foundations of Healthcare Delivery and, if participating, Vanderbilt Program in Interprofessional Learning, Learning Communities—FCC, and Research) continue during the FCC phase. For ease of scheduling, these activities have been aggregated to "longitudinal days." All activities during longitudinal days are considered mandatory.

Immersion Phase (IMM-Years 3 and 4)

The Immersion phase is a highly individualized experience that allows each student to create a schedule that optimally meets core educational needs, strengthens all competency domains, and builds specialized skill sets aligned with the student's future clinical and scholarly trajectory. Students are required to complete 15 one-month blocks over this 22-month period (including the Research Immersion, described below). Students complete a mixture of experiences with varying levels of structured versus work place learning, including acting internships (AIs), integrated science courses (ISCs), advanced clinical experiences (ACEs), and electives. Requirements for experiences across various care settings (primary care, acute care) and clinical disciplines ensure a broad preparation.

Because the Immersion phase is intended to be individualized, each student must develop a personalized learning plan that is approved by his/her portfolio coach as meeting core requirements. Refer to the School of Medicine website for a full description of the requirements of the Immersion phase (medschool.vanderbilt.edu/ume/IP). The longitudinal elements (Foundations of Healthcare Delivery, Learning Communities, and VC₃) continue during the Immersion phase. Some of this longitudinal course work is completed while participating in other core rotations. Some content is delivered in week-long courses, in which an entire class of students physically convenes. All activities during week-long courses are mandatory.

The Research Immersion, an intensive 3-month mentored scholarly experience, must be completed during the Immersion phase. Each mentor works with a student, aligning resources to support the student's project during their planned research months. Once the research months are determined, these agreed-upon months may not be shifted or adjusted as this jeopardizes the project by impacting the effort faculty have made to align said resources. Students must complete the PLAN course before beginning the Research Immersion. Students may request an extension of the Research Immersion of up to a total of six months (as a contiguous or non-contiguous block); approval is contingent upon satisfactory progress across all competency domains and is granted by the Inquiry Program director. Students must complete (or have attained waivers for) all Research Immersion requirements before April (by the end of block #3) of the intended year of graduation.

LONGITUDINAL CURRICULUM REQUIREMENTS

Several curricular elements span all phases of the four years of training.

Foundations of Health Care Delivery (FHD)

FHD is a series of courses, over the four years of medical school, embedding students into care delivery systems to:

- Prepare professionals with systems level skills necessary to provide care that is safe, effective, patient-centered, timely, efficient, and equitable
- Integrate health systems science with clinical care
- Cultivate respectful professionals

The vision of these courses is to offer students a longitudinal experience in which they learn about the systems of health care as well as foundational skills that help them better understand how health systems function, while at the same time gaining important skills to function in and eventually modify those systems. Graduation requirements are detailed at *medschool.vanderbilt.edu/fhd/*.

Vanderbilt Program in Interprofessional Learning (VPIL)

Students have the opportunity to apply for VPIL, a two-year course in which medical, nursing, pharmacy, and social work students work and learn together as a team in a clinical environment. Participation in VPIL allows medical students to fulfill a portion of their FHD requirements for graduation. The goals of the program include:

- Cultivate respectful professionals
- Nurture self-directed workplace learners
- Prepare leaders who contribute to a collaborative practice-ready workforce
- Integrate the patient care experience with health professions knowledge
- Improve the health care delivery system by integrating systems knowledge with patient care.

Student teams learn to provide care to a panel of patients under the supervision of multi-professional attending providers. Teams also meet regularly for a variety of classroom-based and simulation activities focused on social determinents of health. Teams discuss cases together, go on a home visit, and learn a variety of other clinic-based skills that they can accomplish as a team. In their second year, student teams design and implement a quality improvement project in their clinic and present it at an end of year Capstone event.

Graduation requirements for students accepted into VPIL are detailed at *medschool.vanderbilt.edu/vpil/*

Learning Communities

Learning Communities course work capitalizes on strong relationships within the Colleges, utilizing small group formats to address key elements of professional development. The Learning Communities curriculum includes meta-cognition, medical ethics, medical humanities, health care policy, and narrative medicine, delivered in a discussion-based format. Leadership is also a focus of the Learning Communities curriculum.

Inquiry Program

Research and scholarship are addressed over a four-year curriculum that introduces students to the role of physicianresearcher and provides education in the skills, knowledge, and attitudes required to succeed in that role. The Inquiry Program consists of the following components:

- FMK Phase: CASE (Clinical Applications of Scientific Evidence)
- FCC Phase: Discovery
- Immersion Phase: PLAN (Planning, Logistics, and Navigation) and Research Immersion

The research courses in FMK and FCC phases prepare each student to complete a Research Immersion of 3–6 months during the Immersion phase.

Vanderbilt Core Clinical Curriculum

The Vanderbilt Core Clinical Curriculum (VC3) is based upon a set of twenty-five common presenting complaints. These topics do not encompass all that each student is expected to learn, but do represent core clinical problems that all graduates are expected to know. A set of learning objectives is established for each presenting problem. The VC3 topics are introduced in the FMK phase and continually revisited throughout the curriculum. Students are expected to populate a digital dashboard demonstrating experience with these topics throughout their clinical rotations. More information may be found at *medschool.vanderbilt.edu/vc3*.

Core Entrustable Professional Activities for Entering Residency (Core EPAs)

The AAMC has defined thirteen tasks that interns are expected to perform without direct supervision. Training in the Core EPAs is provided throughout the curriculum, and students are assessed throughout FCC and the Immersion Phase. Although proficiency in all thirteen tasks is not a requirement for graduation, progress in the Core EPAs is monitored as part of each student's overall competency development. "Core EPA week," occurring in the spring semester of the third year, includes didactic and simulation activities to support student readiness for residency. This event is mandatory.

COURSE LIST

A full list of doctor of medicine courses is provided in this catalog under Courses of Study.

Tuition, Fees and Financial Aid

Tuition for the academic year 2019/20 is \$58,249. The annual estimated cost of attendance for an M.D. student in academic year 2019/20 is as follows:

First year	\$93,250
Second year	\$93,780
Third year	\$95,070
Fourth year	\$93,722

More information on cost of attendance may be found at *medschool.vanderbilt.edu/financial-services/ md-cost-of-attendance.*

The following university costs are included with tuition:

- professional liability insurance
- student long-term disability insurance
- student health service
- verifications

Please refer to the School of Medicine Tuition, Fees, and Financial Aid section of this catalog for more information about university and School of Medicine costs and fees.

Payment of Tuition and Fees

All regularly enrolled medical students must pay the full tuition each year. There is no exception to this requirement. Graduate students who enroll in courses in the medical curriculum for credit toward an academic degree and who later become candidates for the doctor of medicine degree may be required to pay the full tuition as indicated above. Students in the Medical Scientist Training Program (MSTP) are principally enrolled in either the School of Medicine or the Graduate School each term. Each MSTP student receives a full scholarship that covers the entire tuition and fees of the school in which they are principally enrolled.

For students enrolled in the Doctor of Medicine program, one half of tuition, fees, and other university charges is due and payable by 31 August. The second half of tuition, fees, and other university charges is due and payable by 31 January. Additional information can be found in the School of Medicine Tuition, Fees, and Financial Aid chapter of this catalog and at *finance.vanderbilt.edu/stuaccts*.

Financial Assistance

Education leading to the doctor of medicine requires a careful consideration of financial commitment by prospective students and their families. Financial planning is an important part of the student's preparation for medical school.

Scholarships awarded on the basis of merit and need are available through Vanderbilt. Financial aid from school sources must be considered a supplement to governmental and other sources, rather than the primary source of funds necessary to attend medical school. Scholarships may not be adequate to meet students' demonstrated need, but approved educational expenses are met with funds from a combination of sources, including loans. Government funds that furnish significant loans to medical students are the Federal Direct Unsubsidized Loan and the Federal Direct Graduate PLUS loans. Private and institutional loans are also available to international students.

Additional information and applications for financial aid are online at *medschool.vanderbilt.edu/financial-services/*. Applicants desiring more specific information about financial aid resources should contact the medical school Office of Student Financial Aid.

Assessment System for the Doctor of Medicine Program

Assessment Philosophy

The underlying philosophy for the Doctor of Medicine program is that attainment of the knowledge, skills, and attitudes competencies needed for safe, effective, patient-centered care is a developmental process that occurs over many years of education, training, and practice. It is also based on a philosophy of continuous improvement. Therefore, the system is designed to:

- Guide learning with measures that benchmark performance against explicit expectations;
- Promote the skills needed for accurate and reflective self-assessment;
- Direct students to next learning steps and associated learning resources;
- Provide evidence for high-stakes decisions;
- Provide evidence of program effectiveness.

Since the abilities to accurately self-assess and subsequently create appropriate learning goals are also developmental processes, the system provides students with faculty coaches who assist them as they practice these skills. Importantly, the system encourages students to assume increasing levels of responsibility for their own learning.

Elements of Student Assessment

- VUSM Core Competency Domains: Medical Knowledge; Patient Care; Interpersonal and Communication Skills; Professionalism; Practice-based Learning and Improvement; Systems-based Practice; Leadership; and Scholarship.
- Competencies that describe the specific knowledge, skills, and attitudes within each core competency domain and the synthetic application of those competencies to perform "entrustable professional activities."
- Milestones for focus competencies within each domain that describe explicit and measurable behaviors that learners demonstrate as they progress from novice to expert.
- Course and clerkship grades
- Centralized assessment events
- Full participation in the portfolio review process, as described below. All formative and summative assessments are gathered in an interactive, electronic learning portfolio and can be sorted by course or by competency domain to facilitate portfolio reviews.

Grading Policy

The Doctor of Medicine program has established a series of learning objectives for its medical educational program that are aligned with the competency domains described by the Accrediting Council for Graduate Medical Education (residency requirements): (1) medical knowledge, (2) patient care, (3) interpersonal and communication skills, (4) professionalism, (5) practice-based learning and improvement, and (6) systems-based practice. The ongoing growth of competency in these domains defines the successful development of the physician and occurs during medical school and throughout one's career.

Performance across these domains is assessed in every course and program. In addition to meeting course requirements, satisfactory performance must be maintained in each domain. Efforts are made by program faculty to bring any significant performance concern during a required course or clerkship to the attention of the student early enough to allow sufficient time to develop a remediation plan. A student for whom major concern persists despite coaching may be given a failing grade (F) for the course and/or may not be promoted despite satisfactory performance in other categories.

Grading Scales

Pass/Fail. Final grades of Pass (P) or Fail (F) are applied in the following courses:

- FMK: All courses
- FCC: All courses
- Immersion: Electives; Learning Communities; PLAN
- (Inquiry Program); Foundations of Healthcare Delivery (with the exception of QI courses listed below)

Honors/High Pass/Pass/Fail. Final grades of Honors (H), High Pass (HP), Pass (P), Fail (F) are applied in the following courses:

- Immersion: All ACEs, ISCs, AIs, Foundations of Healthcare Delivery Quality Improvement (QI) and Patient Safety (Sections 1-3 or Advanced Track), and the Research Immersion project
 - o An H grade is given to students for superior or outstanding achievement in all aspects of course work and multiple competency domains.
 - o An HP grade is given to students with superior achievement in several, but not all, aspects/domains.
 - o A P grade is given to students who demonstrate satisfactory achievement in all aspects/domains. If any aspect of performance is marginal, this is indi cated by a designation of "threshold" in the domains(s) of concern.
 - o An F grade is given for unsatisfactory work resulting in failure. A student receiving a "below threshold" in any competency domain, or "threshold" in multiple domains, may receive an F for the course or clerkship.

The Grade of W. The grade of W is entered onto the transcript when a student withdraws from any course (or from the degree program) after the close of the change period but before the end of the term.

Temporary Grades

P-star. A temporary grade of P* is given to students whose performance is marginal because of important deficiencies

in some aspects of course work which preclude awarding academic credit for completion of that course. The P* grade should only be applied if a plan for remediation, such as repeating an exam, has been put in place. The P* grade may be applicable for academic credit only after that remediation has been completed to the satisfaction of the course director, in which case the P* is converted on the official transcript to a P. No grade higher than a P can be assigned after such remediation, and the domain(s) of concern are marked as threshold in the final grade. In the absence of satisfactory remediation, the P* grade is converted on the official transcript to an F. If a transcript is requested before final resolution, the P* is present to indicate the course work has not yet been completed at a satisfactory level.

It is at the discretion of each course director whether such remediation options are available for each course; this is published in the syllabus. Any remediation plan must be completed in a timely manner: for courses in the Immersion phase, within six weeks of receiving the P* grade; in FCC, within six weeks of completion of the student's final clerkship block; in FMK, prior to entry into the FCC phase. P* should not be used to indicate performance that is marginal but does not require course-specific remediation. Such a concern should be indicated as a threshold performance in the relevant competency domain(s). This is then tracked across courses in the portfolio system. P* should not be used to indicate incomplete work.

Incomplete. A grade of Incomplete is to be used only to reflect that mandatory course work has not been completed (for example, if the student was ill and did not attempt the final exam). Incomplete should not be used when work has been completed but at an unsatisfactory level (i.e., work that requires remediation). Any incomplete course work must be completed in a timely manner: For courses in the Immersion phase, within six weeks of receiving the I grade; in FCC, within six weeks of completion of the student's final clerkship block; in FMK, prior to entry into the FCC phase. There is no ceiling on the final grading or competency ratings for a student who previously received an Incomplete.

Clinician Assessments of Student Performance

Faculty and house staff providing primary evaluations of student clinical performance may be asked to report (1) behaviors consistently displayed by the student in the various competencies subject to evaluation, (2) judgment of the level of supervision the student requires to complete core tasks, and (3) an overall assessment of the student's performance on service. In addition to scaled ratings of student performance, faculty are encouraged to provide meaningful narrative comments.

Additional information about phase-specific assessments of student clinical performance is provided in the section of this catalog outlining the doctor of medicine curriculum.

Expectations for Conduct During Examinations and Work Submitted for Academic Credit

Faculty and Students' Responsibilities

 In order to create and maintain an academic environment that promotes the highest professional standards, it is important to be transparent in the expectations of all students regarding conduct in examination settings and regarding all work submitted for academic credit. As stated in the Vanderbilt School of Medicine Honor Code, "By demanding great responsibility, the Honor System fosters an environment of freedom and trust that benefits the entire Medical School." It is the responsibility of the faculty and staff to help protect the trusting environment created when the students agree to and sign the Honor Code pledge.

- 2. In order to facilitate transparency of expectations, students are apprised of appropriate conduct for a given course on the first day of class or during the first week that a course meets. Standards of behavior for each course are published in the course syllabus, and course directors explain the pertinent points (especially in regard to examinations) verbally as well.
- 3. Appropriate attribution is expected for all work submitted for credit and in all entries to the electronic health record. Students must use proper citation practices and are expected to be aware of appropriate mechanisms to avoid plagiarism. Faculty clarify if an assignment may be collaborative.
- 4. It is the student's responsibility to be aware of and to adhere to the published guidelines for each course.
- 5. Incidents going before the Honor Council may be separately incorporated into the competency domain assessment and promotion committee review process as appropriate.

Expectations for Conduct in NBME Examinations

• "Suspicious behavior" during an exam may be construed as a violation of the Honor Code. Examples include looking at the work of other students and excessive talking or other disruptions.

The use of cell phones is prohibited during the examination period, and phones should be stowed outside of the classroom until the examination is completed. Any cell phone brought into the exam room is collected by the proctor until after the exam. If a student has a legitimate need to be available to urgent outside communications during the assessment period, the student must make the appropriate arrangements with the Office of Undergraduate Medical Education (OUME) prior to the assessment period. An OUME staff member is designated to receive any urgent communications and notifies the student of outside communications if the need arises.

• Personal belongings may not be brought in the seating area of the testing room. All materials, except computers for online examinations, must be left outside the room or deposited in the area designated for personal belongings. Items listed below are not permitted in the seating area of the testing room:

a. Personal digital devices, calculators, or cellular

- telephones
 - b. Recording/filming devices
 - c. Watches with alarms, computer, or memory capability
 - d. Radios or paging devices
 - e. Reference materials (books, notes, or papers)
 - f. Backpacks, briefcases, luggage, coats, or brimmed hats
 - g. Beverages or food of any type

h. Eyeglasses are permitted, but may be subject to inspection by proctors

• For online examinations, students are responsible for confirming device eligibility, working with the educational technology team as needed.

• Students may leave the room only for restroom breaks during the examination. Leaving the room can be disruptive to other students, so it is preferred that students not leave the room unless it is unavoidable. Students are escorted by a proctor to the restroom, and additional testing time is not given. • It is unacceptable behavior to discuss the exam or course materials with others during the exam.

• If a student finishes the exam before time is called, the student should leave quietly and not return to the classroom or immediate outside area until the examination period is over.

• Because students take exams at different times, material covered on exams SHOULD NOT be discussed inside or outside of the examination room during the designated exam period.

Faculty Advisers' Roles and Responsibilities for Grading

The School of Medicine supports an active advising program for students in every year of medical school. This program supports faculty members who are selected and trained to counsel students regarding academic progress, career direction, and personal well-being. In order to preserve the integrity of the assessment system and protect students from either real or perceived bias, faculty members who serve in formal advisory roles do not assign summative course or clerkship grades without the assistance of a faculty grading committee. Faculty members who serve as advisers to individual students may provide formative feedback to students as part of other teaching responsibilities. If this feedback is submitted to a course director or grading committee as part of a summative assessment process, the advising relationship is disclosed.

Student Grievance Concerning Grades

Students should seek redress of a problem with a grade as soon as possible after receiving the grade and in no case later than four weeks after the grade is released. Students with a problem should confer directly with the course director. Every effort should be made to resolve the problem fairly and promptly at this level. If the student cannot resolve the problem through discussion with the course director, within two weeks of talking with the course director, the student should make a formal request of an appeal in writing to the course director and the associate dean for medical student affairs. The ADMSA informs the associate dean for undergraduate medical education, which prompts a review of the course's assessment practices by the Standing Assessment Committee, as well as review of the individual student's situation by the ADMSA, the ADUME, and a neutral faculty reviewer as indicated. If resolution is still not achieved, the associate dean for medical student affairs refers the case to the senior associate dean for health sciences education, who makes the final decision.

Medical Student Progress and Promotion

Promotion committees of the faculty, in consultation with representatives of the faculty responsible for instruction, are charged with making recommendations to the dean and the executive faculty regarding progress and promotion of students. The executive faculty of the School of Medicine has final responsibility for the determination of medical student progress in the school.

Students who entered the curriculum in or before 2012, exited the traditional pathway and then return, follow the promotion procedures applicable to the class with which they are scheduled to graduate; however, as much as feasible, their academic requirements are aligned with expectations at the time of their entry to school. Such students are expected to confer with the ADUME and the ADMSA to clarify expectations prior to registering for their final year.

Portfolio Reviews

The portfolio review process serves to summarize evidence regarding student performance to direct future learning and to guide decisions of the promotion committees defined in the Promotion Committee section of this chapter. At times designated on the academic calendar for each phase, students prepare either formative self-assessments (FSAs) or summative self-assessments (SSAs) that reflect on the current cycle. These self-assessments use a VUSM Core Competency format and are guided by templates in the portfolio.

Students begin their self-assessments by reviewing data accrued for each of the VUSM competencies in a core competency domain. This data accrues from curricular assessments, and students may enter data that represents extracurricular activities, such as volunteer work or organizational leadership. For each competency, students designate a milestone level that describes their consistent level of achievement. Students assign an overall progress level for each VUSM core competency domain:

For the FMK and FCC phases, these domain progress levels are:

- Below Threshold
- Threshold
- Target

For Immersion phase, these progress levels are:

- Below Threshold
- Threshold
- Target
- Reach

"Below Threshold" indicates failing performance. "Threshold" indicates a marginal performance that meets expectations in some areas but not all.

"Target" indicates a performance that meets all expectations. "Reach" indicates a performance that exceeds expectations for students in that phase.

Because the attainment of competencies is a developmental process, the performance levels that define Threshold, Target, and Reach progress with the phases of the curriculum.

After assigning a domain progress level for each core competency domain, students must compose the following:

- A brief justification for each level, citing specific assessment evidence. These justifications are guided by prompting questions and must be written for all core competency domains.
- A summary reflection indicating areas of strength, areas for improvement, and areas of interest. This reflection is guided by prompting questions.
- A personalized learning plan (PLP) based on the summary reflection. The PLP consists of:
 - o Learning goals
 - o Activities that students undertake to meet learning goals
 - o Metrics that indicate attainment of learning goals
 - o Timeline for achievement

Students must specifically address any core competency domain with a progress level of Threshold or Below Threshold both in the summary reflection and in the PLP.

Students submit self-assessments and PLPs electronically and schedule meetings with the portfolio coaches during specific review periods. Coaches review student portfolios prior to the meetings, and independently designate progress levels for each core competency domain. At the time of the meetings, coaches and students review assessments, discuss and attempt to resolve any differences in progress level determinations, and review PLPs for appropriateness. Because this process integrates performance evidence across courses, it is possible that a student's performance could be designated as "threshold" or "below threshold" in a competency domain despite passing grades in all courses. The original student self-assessment, the coach assessment, and the report of the joint assessment resulting from the student-coach meeting are retained in the portfolio. If differences between student and coach interpretations of evidence were not resolved during the student-coach meeting, this is indicated in the coach-finalized form.

Promotion Committee Process

Each Promotion Committee member is assigned a cohort of students to follow throughout the phase. Prior to each meeting, Promotion Committee members review the portfolio and learning plan of each assigned student. Promotion Committee members have complete access to the assessment evidence in the Learning Portfolios of all students assigned to them to assist in making these determinations.

Meetings occur three times during the Foundations of Medical Knowledge phase, twice in the Foundations of Clinical Care phase, and three times in the Immersion phase. Additional meetings may be called by the ADUME if performance concerns arise regarding any individual student or as needed at the discretion of the ADUME.

Students to be discussed during committee meetings include:

- any student on probation;
- any student with a failing or marginal course grade;
- any student with a domain progress level of Threshold or Below Threshold;
- any student seeking special privileges that require committee permissions; and
- other students as deemed necessary by faculty or administration.

If a committee member cannot attend a meeting in person or remotely, the assistant dean for medical student assessment will present student information on behalf of the committee member. The committee member assigned to the student shares with the ADA any information that he/she may have assembled in preparation for the meeting. Discussion includes input from the student's portfolio coach, course directors, and other members of the committee.

Course directors for their respective phases attend Promotion Committee meetings to provide information about the class as a whole, and to answer questions that committee members may pose regarding individual students. Portfolio Coaches also attend committee meetings during which any of their assigned students are scheduled for presentation. A quorum of the Promotion Committee shall consist of at least four of the voting members of a committee; however, any proposed dismissal requires the participation of all voting members, unless an exception is granted by the SADHSE.

Each promotion committee is charged with making decisions or recommendations as follows:

Decisions on Satisfactory Progress

Formative reviews assess whether students are making satisfactory progress towards attaining the achievement levels required for promotion to the next phase, or towards graduation, based on review of the assessment data compiled in each student's portfolio. The Promotion Committees make a final determination regarding the correct domain progress levels based on the evidence in the portfolio as well as evidence presented during the committee meeting. Any students on probation are closely re-evaluated during these meetings.

- 1. *Satisfactory Progress:* Generally for students with progress levels for all domains at Target or Reach and passing grades in all courses
- 2. Satisfactory Progress with Concern: Generally for students with 1-2 domains at Threshold (regardless of course grades) and/or P* course grade
- 3. Unsatisfactory Progress: Generally, for students with >2 domains at Threshold, persistent Threshold performance in any single domain over time, or any domain Below Threshold (regardless of course grades), and/or a failing course grade**. Ordinarily these students are placed on academic probation. (See section on Probation below)

**Any performance deficiency that is serious enough to result in course failure must be attributed to one or more specific competency domains by the course director, which automatically results in a Below Threshold level in that domain for that portfolio review cycle.

Students with designation of "Satisfactory Progress with Concern" or "Unsatisfactory Progress" receive a Letter of Concern from the Promotion Committee that outlines areas of concern and expectations for improvement. Letters of Concern are not reported externally and are intended to assist students in avoiding adverse actions; see section on Adverse Action below. The PLPs for these students must explicitly address concerns and be approved by the Promotion Committee; the progress of such students is reviewed at the next committee meeting. The Promotion Committee may require additional meetings between the coach and such students during the period between PC meetings. Students who fail a required block, course, or clerkship must repeat that element, or must have an alternate remediation plan that is approved by the course director. The remediation plan must be articulated in the PLP.

Decisions on Student Promotion

Decisions regarding promotion are made at the end of the FMK phase and the end of the FCC phase. In view of the integrated and individualized nature of the Immersion phase, meetings during this phase focus on the academic progress of the individual students, granting eligibility for the national residency matching process, and certifying eligibility for graduation.

Promotion Committees determine whether students are ready for promotion based on successful completion of all phase requirements, as evidenced by passing grades in all required courses, and satisfactory progress in each VUSM Core Competency Domain. The Promotion Committee's determination of satisfactory progress in competency domains is based on review of the assessment documentation compiled in each student's learning portfolio. Students must fully participate in the self-assessment and personalized learning plan process in order to be promoted to the next phase.

The FMK and FCC Phase Promotion Committees make one of the following recommendations for each student (see initial section under Promotion Committees, above, for frequency of Promotion Committee meetings):

- 1. Promotion to next phase
- 2. Promotion contingent upon authorized delayed completion of specified requirement(s). To support the individualized nature of our curriculum, situations may arise in which it is appropriate to permit special scheduling of educational opportunities. Students in good standing may request such scheduling flexibility through the ADUME. Some students, in compliance with approved targeted remediation plans, may also be eligible for this action.
- 3. Promotion on probation which include a plan for targeted remediation
- 4. No promotion
 - a. Targeted remediation, with later re-evaluation for promotion
 - b. Repeat the phase on probation
 - c. Dismissal

Targeted remediation may include repeating a failed exam, retaking a failed course, and/or specialized coaching for deficits in specific domains.

The Immersion Promotion Committee makes one of the following decisions or recommendations for each student in the fall of the anticipated final academic year of training (see initial section under Promotion Committees, above, for frequency of Promotion Committee meetings):

- 1. Promotion to senior status (eligible for match process)
- 2. Promotion on probation (eligible for match process) which includes a targeted remediation plan
- 3. No promotion
 - a. Targeted remediation
 - b. Dismissal

The Immersion Promotion Committee makes one of the following decisions or recommendations for each student in the spring of the anticipated final academic year of training:

- 1. Recommended for graduation
- 2. Not eligible for graduation
 - a. Targeted remediation on probation b. Dismissal

Because the portfolio review includes assessment of competencies across courses, it is possible for a student to pass all courses and still have concerns within competency domains that warrant probation or dismissal.

Decisions on all actions other than dismissal (promotion, promotion on probation, no promotion with targeted remediation, or no promotion with repeat the phase on probation) are made by the Promotion Committee. The SADHSE reviews those decisions upon the written request of the student as set out in the section on probation below.

Students are notified by the committee chair and the ADUME of all Promotion Committee decisions. For the action of promotion, this is generally done in writing. For other actions of the Promotion Committee, in addition to written notification, the student is informed in person (if possible) by the ADUME or the ADMSA in order to facilitate appropriate advising.

Adverse Actions

Probation

Promotion Committees ordinarily recommend that a student be placed on academic probation if course grades include any failures, or if competency progress levels are at Threshold for two or more domains, persistently at Threshold in a single domain despite coaching or remediation, or at Below Threshold in any single domain.

Academic probation generally monitors performance in active course work for a period of time as specified by the Promotion Committee. Probation serves three functions:

- It serves as official documentation that the student is deficient in areas related to academic performance and/ or competency development.
- It provides a pathway that the student must follow in order to regain good standing. This may include remediation, maintaining appropriate performance standards, and/or adhering to professional expectations.
- It describes the consequences that result if a student does not meet stated expectations during the period of probation.

Probation is noted in the Medical Student Performance Evaluation and may be reported in graduation verifications (e.g., for medical licensure).

The personalized learning plans (PLPs) for students who are placed on probation must include a remediation plan that explicitly addresses the domains of concern and is approved by the Promotion Committee. The committee may add requirements to the PLP, such as regular meetings with the ADMSA or other advisers, and/or recommendations such as elimination of extracurricular activities that may be interfering with satisfactory academic progress. All students who are placed on probation receive a letter from the ADUME and the chair of the Promotion Committee that outlines reasons for the probation, requirements and recommendations for addressing deficiencies, conditions for removal of probation, including an expected time frame, and actions that may be taken if conditions are not met.

Any student on probation is presented at the next Promotion Committee meeting to determine whether there has been satisfactory progress (see initial section under Promotion Committees, above, for frequency of Promotion Committee meetings). At that time, the committee may take the following actions:

- 1. *Remove probation:* Domains of concern now at Target. Probation can be removed at any PC regular meeting if students have satisfactorily addressed deficiencies, even if this is before the time frame originally designated by the PC.
- 2. *Continue probation:* Domain scores not yet at Target but progress is being made.
- Recommend dismissal: If a student who is on probation receives a failing or P* grade in a course, or demonstrates persistent Threshold or Below Threshold performance in any competency domain, the Promotion Committee considers dismissal.

Temporary Suspension

The School of Medicine reserves the right, through the SADHSE (or designee), to temporarily suspend a student for conduct disrupting or otherwise negatively impacting the learning

environment, pending referral to the Promotion Committee or other appropriate process. The SADHSE notifies the student in writing of the conditions of the temporary suspension. If the student is reinstated, the student works with the ADMSA to address any course work missed during the suspension.

Dismissal

Promotion Committees ordinarily recommend dismissal only after a student has been given a reasonable probationary period to address deficiencies. Most often, this reasonable period consists of a full academic phase or academic year. Dismissal may also be recommended at any time for a student who demonstrates either a singular egregious behavior or is involved in one or more serious incidents inconsistent with the expectations for medical students at VUSM or in violation of university policy.

A decision to recommend dismissal requires participation of all promotion committee members, unless an exception is granted by the SADHSE. The committee meets as soon as possible to consider the situation, including its severity, and renders a recommendation. The ADMSA meets with the student prior to the committee meeting to hear the student's explanation, including any mitigating circumstances that could affect the committee's recommendations. The ADMSA presents the student's explanation, as well as any mitigating circumstances, to the Promotion Committee. Alternately, the student may elect to appear before the committee in person, submit an explanation in writing, or ask another faculty member to appear on his or her behalf.

Any recommendation for dismissal is presented by the ADUME to the dean or the dean's designee which is normally the SADHSE. The dean or designee may reverse the recommendation, in which case the dean or designee responds in writing to the Promotion Committee. In this circumstance, the Promotion Committee considers whether probation or other action is appropriate under the guidelines above. If the dean or designee accepts the recommendation of dismissal, the decision is described in a notice to the student written by the promotion committee chair and the ADUME. This communication is presented to the student in person (if possible) by the ADUME or the ADMSA.

Other Promotion Committee Decisions

Eligibility for Special Experiences

All committees may serve a role in recommending students for special opportunities, such as dual degrees or leaves of absence.

Certification for Participation in Residency Match Process

Students apply to residency programs during the fall semester of the intended academic year of graduation. In the spring semester, the School of Medicine must officially certify that students participating in the match process are eligible for graduation. The Promotion Committee for the Immersion Phase reviews student progress to make this determination in February. Any student with insufficient completion of requirements for graduation (accounting for planned course work in February, March, and April) could be withheld from the match process. Student Recourse Regarding Promotion Committee Decisions

Probation/Non-promotion

Students may ask for reconsideration of any decision for probation or non-promotion. The request must be made in writing to the associate dean for medical student affairs (ADMSA) within seven (7) calendar days of delivery of the committee decision. Reviews are carried out by the senior associate dean for health sciences education (SADHSE). The student may meet with the SADHSE or present any additional information in writing. The SADHSE reviews the information presented by the student, information from the associate dean for undergraduate medical education (ADUME), and input from the relevant promotion Committee (to include minutes, letters issued by the Committee, and direct input from the Committee Chair). The SADHSE (1) upholds the Promotion Committee decision, (2) requests a meeting of the Promotion Committee for reconsideration of additional information, or (3) reverses the decision. The decision of the SADHSE is provided in writing to the Promotion Committee. Even if the SADHSE reverses a decision of the committee, the SADHSE can require that the student follow any committee requirements and/or recommendations for addressing deficiencies.

Dismissal

Upon a decision of dismissal, a student is notified in writing of that decision and of the following options:

- Voluntary withdrawal from VUSM. The decision to withdraw must be presented in writing by the student to the ADMSA within seven (7) calendar days after the student is informed of the decision for dismissal.
- 2. Dismissal. If the student does not request to withdraw within the seven-day period, the dismissal takes effect on the eighth calendar day.
- 3. Appeal. The student must make a formal request for appeal in writing (which may include electronic mail) so that it is received by the ADMSA within seven (7) calendar days after the student is informed of the decision for dismissal. A student who requests an appeal forfeits the option to withdraw. The ADMSA serves as the student's information resource in the appeals process and informs the ADUME and the SADHSE of the student's request for appeal.

If a dismissal decision is appealed, the student is placed on administrative leave and may not participate in patient care duties until the appeal is resolved. The dean or dean's designee, usually the SADHSE, assembles and convenes a review panel consisting of at least five (5) members of the executive faculty for an appeal review meeting within 30 days. In this review, the role of the dean or dean's designee is purely administrative, and he or she has no decision-making authority in this context. In preparation for the meeting, the ADUME makes available any relevant information/documentation to the panel, which includes all the assessment components of the student's portfolio. The ADMSA provides information to the student about the process. The student may choose to be present at the appeal review meeting and/or make a presentation in writing, which may contain documentation from other students, faculty members, and/or other sources. The student cannot have other representatives at this meeting. The chair of

the Promotion Committee and the ADUME attend this meeting to present the findings of the Promotion Committee. The ADMSA also attends the meeting to answer questions from the review panel. The review meeting is conducted without the presence of attorneys for either party. However, either party may consult with its own counsel prior to the review meeting or during any breaks that might take place during the meeting. If the review panel upholds the decision, the student is dismissed without the opportunity to withdraw. If the review panel reverses the decision, the review panel provides the Promotion Committee with its written findings and refers to the Promotion Committee for consideration of whether probation is appropriate and, if so, for determination of the requirements and conditions to accompany probation. The decision of the review panel is final for the school.

Withdrawal from School

Students who wish to withdraw from the School of Medicine for any reason must do so in writing to the associate dean for medical student affairs. In some cases, the student may be able to receive a refund of tuition, but it is important that the student discuss this decision with VUSM Office of Enrollment Services staff before moving forward with the process. A student who has been dismissed from school, but decides to appeal the decision, is no longer able to choose to withdraw. If a student withdraws, reentry is possible only through the application process.

M.D. Student Support and Advising

Vanderbilt University School of Medicine provides comprehensive advising resources to promote student wellness and success in medical school. The advising program provides distinct resources to address the three domains of student life: academic, career, and personal. Students are introduced to the system of advising at orientation prior to entering their first year of medical school. Subsequent discussions of advising resources take place in a number of settings during the first semester of medical school. In addition to the formal advising system, a variety of other resources for student academic support exist, including phase/course/clerkship directors, course self-assessment modules, group study, and optional review sessions.

Students are strongly encouraged to seek assistance and support of various types as needed during training. The abilities to self-identify a need for assistance/support and to reach out to resources are important professional skills, and students are expected to develop these skills during their medical school careers.

School of Medicine Resources

VUSM Office for Medical Student Affairs. This office provides resources to support all students. The ADMSA is available for individual meetings and hosts weekly office hours.

VUSM Colleges. All entering students are placed in one of the four advisory Colleges upon matriculation—Batson, Chapman, Gabbe, or Robinson. Each College is led by two faculty College mentors, with whom students meet regularly in groups and individually, as needed. At these meetings the students discuss their progress, wellness, and career exploration. In addition to group and individual meetings, the College mentors have weekly office hours, as well as study breaks for students. Students may connect with their College mentors at any time for guidance and support. Although College mentors provide direct teaching in a variety of settings, they do not assign student grades, and College mentors do not make decisions regarding promotion of students from one year to the next. College mentors do not have access to the students' academic records.

Learning Portfolio. Upon matriculating, each student is assigned to a Portfolio Coach and develops a learning portfolio. Students meet with their Portfolio Coaches individually at designated time points to critically review individual performance data and establish academic goals across all domains of competence. Additionally, each student should meet with his/ her Portfolio Coach on an as-needed basis to review any specific academic concerns. Refer to the Medical Student Progress and Promotion section of this catalog for a detailed description of the learning portfolio system and portfolio coaches.

Student Assistance Program. This program provides students with guidance in study skills, test-taking strategies, and general advice for academic success. Students may directly contact the Student Assistance Program director regarding academic concerns.

VUSM-Funded Tutoring Services. Tutoring funded by the School of Medicine is available for students who are having serious difficulty academically or who are deemed by the block/course director or the assistant dean for medical student assessment, who is also the student assistance program director, to be at risk for marginal or failing performance (ordinarily ~75 percent or less).

Decisions about access to this program and about tutor assignments are made jointly by the block/course director(s) and the director of the Student Assistance Program. This allows the matching of individual student needs with individual tutor strengths and assures that tutoring resources are distributed appropriately. Generally it is expected that students will have availed themselves of other forms of student academic support (e.g., course self-assessment modules, group study, review sessions, etc.) before entering formal tutoring.

If a student has failing or marginal performance in a block or course, and wishes to obtain a VUSM-funded tutor, he/she must follow these steps:

- a. The student sets up a meeting to consult with the block/course director(s) and/or the Student Assistance Program director.
- Once the student's situation has been assessed by the block/course director(s) and the Student Assistance Program director, the appropriate level of tutoring support is determined.
- c. On assignment of a tutor, the student contacts the assigned tutor to set up tutoring appointments.
- d. The student should also review performance challenges with his/her Portfolio Coach and include the area (s) of concern in his/her Personalized Learning Plan.

Because VUSM-funded tutoring services require no payment from students, those who receive tutoring are responsible for signing a tutoring sheet that confirms that he/she worked with the assigned tutor for the time indicated by the tutor. Tutoring sheets must be submitted by the tutor to the the student assistance program director's assistant in a timely manner.

The duration of time during which VUSM-funded tutoring services are provided is determined by block/course directors and/or the Student Assistance Program Director. Eligibility for services is reassessed on an ongoing basis once tutoring begins. Individual tutor assignments may be changed or adjusted over time to meet the needs of the pool of students requiring aid.

Important note about VUSM-funded tutoring: In situations where VUSM-funded tutoring has been recommended, and the student decides not to avail him/herself of this service, he/she should be aware that this may be viewed negatively by the Promotion Committee in the context of ongoing academic difficulty.

Privately Paid Tutoring. Students who are performing adequately but wish to seek additional assistance through private tutoring (e.g., from upper classmen) are responsible for arranging for these services and for payment.

VUSM Office for Diversity Affairs (ODA). This office provides resources to support students on issues related to disability, ethnicity, gender, religion, and sexual orientation. The many programs in ODA serve individual students' needs and educate the medical school community on diversity issues.

University Resources

The university provides a range of services to School of Medicine students, including access to medical care, psychological counseling, and disability accommodation. The university also provides resources to protect all students from discrimination, harassment, and retaliation. Information on these and other university services may be found in the Life at Vanderbilt chapter of this catalog.

Career Advisory Services

The Careers in Medicine (CIM) program at Vanderbilt University supports students as they explore career options in the health care field, provides structured advising as they decide among various specialty choices, and paves the path for graduates to succeed as they begin to embark upon their professional journey. Programming is planned by a student-led committee, in conjunction with the associate dean for medical student affairs and the CIM faculty advisers, to ensure that helpful, timely, and relevant information is provided to VUSM students at the right stage of training. CIM also has resources on a national level through the American Association of Medical Colleges.

Health and Wellness

In addition to the Vanderbilt University resources described earlier in this chapter, the School of Medicine offers, through its Office of Medical Student Affairs, specialized programs to meet the wellness needs of medical students.

Student Wellness Program: Vanderbilt University School of Medicine's Wellness Program was created to help students develop healthy living habits in the context of the stresses of medical school. It does this by celebrating student involvement in those activities important to their physical, social, and spiritual wellness. The Wellness Program is a student-run initiative composed of five committees, each supporting a different area of student well-being—physical/body, mind/spiritual, interpersonal, academic/professional, and environmental/ community. Throughout the year, the Wellness Committee is responsible for supporting student life through various programs, events, and resources for medical students. More information about the Student Wellness Program is available online, at https://medschool.vanderbilt.edu/student-affairs/ student-wellness/.

The Colleges Program: Each medical student is assigned to one of four learning communities, called "colleges," upon entering the M.D. program. Each college spans the four years (or more for dual degrees) of medical school, providing different "generations" of medical students a chance to meet, socialize, and create community and support. Each college also has two faculty member college mentors who are selected based on a competitive application process including student input. Additionally, each college has eight to ten assigned faculty affiliate advisers and ten student affiliate advisers (3rd- and 4th-year student peer mentors) who also support the mentoring and well-being mission of the colleges. Together, the learning community creates a "home within a home," providing students a rich environment of academic and career mentoring, a collaborative, safe environment for learning and discussion, and general support and encouragement. More information about the Colleges Program is available online at medschool.vanderbilt.edu/student-affairs/the-colleges/.

Faculty Support and Advising Roles

Many individuals provide advising and support to VUSM students. Each of the advising roles at Vanderbilt is defined in a manner that makes it distinct from, yet complimentary to, the other roles in the system. Each faculty member in an advising role undergoes development on the specific role as well as the overall advising system. The product of faculty development is an adviser who is able to perform his or her advising role responsibilities and is also able to refer students to resources as appropriate to individual student needs.

Managing Multiple Faculty Roles

Faculty members engaged in multiple educational roles can face competing demands, which may directly or indirectly affect (or have the appearance of affecting) an individual's professional judgment in exercising any educator duties and responsibilities. Of particular concern to students is the intersection of roles involving advising students regarding personal or academic struggles with roles in assessment of student performance or assigning grades.

To identify and manage potential conflicts, the VUSM administration established a system that defines compatible and incompatible faculty roles within the educational enterprise. Authority over this system resides centrally, with the Office of the Senior Associate Dean For Health Sciences Education (SADHSE).

The Educator Role Matrix (vanderbi.lt/rolematrix) illustrates roles that have been identified as including some potential for conflict. The matrix places advising roles in one of two categories as they relate to assessment activity: (1) Manageable conflict, and (2) Incompatible conflict. For manageable conflicts (yellow on matrix), the adviser must develop and submit for approval by the senior associate dean for health sciences education a plan of action that mitigates or eliminates the role conflict.

The Undergraduate Medical Education office maintains records of Role Conflict Management Plans (management plans are available to students upon request). When roles are determined to be incompatible (red on matrix), the faculty member must relinquish either the assessing or advising role. Before each new academic year the associate dean for undergraduate medical education (ADUME) reviews all educators' roles and existing conflict management plans to ensure that they conform to the school's standards. Any new conflict management plans required are completed prior to the commencement of the academic year.

Key Advisory Roles

Associate Dean for Medical Student Affairs (ADMSA): The ADMSA is a member of the VUSM administration. Her/his primary role is advising on academic, career, and personal concerns. The ADMSA has office hours and meets with students in all years of training. The ADMSA is the primary VUSM official designated to write each student's Medical Student Performance Evaluation, but students may request that another school official complete the MSPE. The ADMSA also writes letters of recommendation for students applying for scholarships or various academic opportunities. The ADMSA oversees the Colleges program, the Student Wellness Program, ASPIRE (the mistreatment reporting system), and the Careers in Medicine program. The ADMSA has access to all academic records. The ADMSA may not occupy any of the advisory or assessment roles contained in the Educator Role Matrix.

Associate Dean for Undergraduate Medical Education (ADUME): The ADUME is a member of the VUSM administration. Her/his primary role in the medical school involves development and delivery of curriculum and assessment for the M.D. degree. The ADUME has office hours and can meet with students in any year of training to discuss academic and career concerns. The ADUME frequently meets with students who are navigating the curriculum to maximize various academic opportunities. The ADUME has access to all academic records and administers the Promotion Committee process. The ADUME may not occupy any of the advisory or assessment roles contained in the Educator Role Matrix.

Assistant Dean for Medical Student Assessment (ADA): The ADA is a member of the VUSM administration. Her/his primary role is to identify and assist students with performance issues. One of the key roles of the assistant dean for assessment is to direct the Student Assistance Program (SAP). The goal of the SAP is to provide students with guidance in study skills, test-taking strategies, and general advice for academic success within a rigorous medical school curriculum. The ADA serves as an academic resource for students, meeting with individuals as indicated and coordinating tutoring in partnership with course directors. The ADA communicates with Vanderbilt University Student Access Services in the event that a student requires accommodation. The ADA helps to coordinate Promotion Committee meetings by preparing the meeting agenda, assembling the academic data to be reviewed, attending all meetings and reporting on student progress/concerns as needed, and following up with students as needed following meetings. The ADA has access to all academic records. The ADA may not occupy any of the advisory or assessment roles contained in the Educator Role Matrix, with the exception of course director provided a grading committee is in place.

College Mentor (CM): CMs are VUSM faculty members who manage the activities of and advising programs within the VUSM Colleges and Learning Communities. CMs serve assigned students as advisers in the areas of professional wellness and career counseling. CMs are involved with programming throughout the year in the school's Student Wellness Program and Careers in Medicine program. CMs also serve as teachers in the VUSM Learning Communities, focusing on content in medical humanities, metacognition, ethics, leadership, and policy. The CMs do not grade students in learning communities, but instead provide formative feedback. CMs may have teaching or supervisory roles with their college mentees in the context of other academic activities. However, role conflict management plans are created to ensure that they do not grade their mentees in those activities. CMs do not have access to student academic records (grades, etc.). A student may grant a CM access to his/her academic record and may revoke such permission at any time without negative consequences.

Portfolio Coach (PC): The PCs are VUSM faculty members who work with an assigned group of students throughout medical school. The PC role was created as part of Curriculum 2.0. Each member of an entering class is assigned an individual coach from the cohort of coaches appointed for their class. Students meet individually with their assigned PCs three times during the first year of medical school and at least twice during each subsequent year. Portfolio coaches play a vital role in the Curriculum 2.0 assessment system. PCs have access to the academic records of only the students to whom they are assigned. They coach individual students in developing the skills for informed self-assessment and lifelong learning. They help students critically appraise data about their performance and translate those assessments into action plans for future learning. PCs have an active role in the assessment of assigned students' progress through the curriculum.

Specialty Adviser (SA): As students approach their senior year of medical school, they are urged to choose an adviser from the specialty in which they will apply for residency. Specialty advisers are VUSM faculty members. Once established, this advisory relationship exists for the duration of the residency application and the National Residency Match processes. SAs provide academic and career counseling, strategic schedule planning, and interviewing advice specific to the specialty of choice. The primary goal of this relationship is to provide students with resources to most effectively obtain a successful residency match.

Medical Student Performance Evaluation

The Medical Student Performance Evaluation (MSPE) is created as a part of a student's permanent record and is submitted through the Electronic Residency Application Service system by October 1 for fourth-year medical students. Included in the MSPE are summative comments from performance evaluations throughout medical training.

Generally, the associate dean for medical student affairs works with students on the creation of the MSPE. However, students may instead choose to work with the associate dean for undergraduate medical education or the assistant dean for diversity and inclusion to create the MSPE. Students are neither asked nor expected to provide any reason or justification for their choice of MSPE writer.

Honors and Awards

Alpha Omega Alpha

A chapter of this medical honor society was established by charter in the School of Medicine in 1923. Not more than onefourth of the students of the fourth-year class are eligible for membership, and no more than 16 percent (one-sixth of the graduating class) can be nominated per class.

The society has for its purpose the development of high standards of personal conduct and scholarship and the encouragement of medical research. Students are elected into membership on the basis of scholarship, character, and originality.

Gold Humanism Honor Society

A chapter of this honor society was founded in 2015 in an effort to recognize, support, and promote the values of humanism and professionalism in medicine. The number of members eligible to be nominated and selected is up to 15 percent of the medical school class. Students are elected into membership by showing that they are exemplars of integrity, excellence, compassion, altruism, respect, empathy, and service.

Founder's Medal

The Founder's Medal, signifying first honors, was endowed by Commodore Cornelius Vanderbilt as one of his gifts to the university. This medal is awarded to the student in the graduating class of the Doctor of Medicine program who, in the judgment of the faculty, has achieved the strongest record in the several areas of personal, professional, and academic performance in meeting the requirements for the doctor of medicine degree during four years of study at Vanderbilt.

Graduation Awards

AMERICAN ACADEMY OF NEUROLOGY MEDICAL STUDENT PRIZE FOR EXCELLENCE IN NEUROLOGY. This award is to recognize medical students for excellence in clinical neurology.

BEAUCHAMP SCHOLARSHIP. Endowed and awarded to the student showing the greatest progress in the field of psychiatry.

LONNIE S. BURNETT AWARD IN OBSTETRICS AND GYNECOLOGY. This award is given to the student demonstrating superior performance and who exemplifies the qualities of dedication, leadership, compassion, and integrity in the field of obstetrics and gynecology.

DIXON N. BURNS AWARD IN MEDICAL ETHICS. This is an award given by the Center for Biomedical Ethics and Society to the graduating medical student who has gained distinction in biomedical ethics through notable scholarship, excellence in clinical ethics consultation, and collegial engagement in the life of the center as a medical student.

THE GEORGE AND BARBARA BURRUS MEDICAL MISSIONS AWARD. This award is presented to a student who has demonstrated exceptional interest and participation in providing medical care to the poor during medical school, either locally or abroad.

CHAPMAN SOCIETY AWARD. With nominations generated from the fourth-year class, this award is presented to a member of the graduating class who possesses those intangible qualities of common sense, knowledge, thoughtfulness, personal warmth, gentleness, and confidence which combine to make the "Ideal Doctor"—the person fellow classmates would most like to have as their personal physician.

THE GEOFFREY DAVID CHAZEN AWARD. This award for innovation in medical education was established to recognize a student, resident, fellow, or faculty member who has made special contributions to the educational programs of the Vanderbilt University School of Medicine through the development and implementation of effective innovation in educational approach.

AMOS CHRISTIE AWARD. This award recognizes the student in the graduating class who has demonstrated the outstanding qualities of scholarship and humanity embodied in the ideal pediatrician.

JOHN G. CONIGLIO PRIZE IN BIOCHEMISTRY. This award presented to a medical student who has distinguished him/herself in biochemistry. Both accomplishments in biomedical research and performance in biochemistry courses are considered in evaluating candidates for this award. This award was established by friends of Professor Coniglio on the occasion of his retirement to honor his many contributions to medical education at Vanderbilt. OSCAR B. CROFFORD AWARD FOR DIABETES/ ENDOCRINE RESEARCH. This award is presented by the Division of Diabetes, Endocrinology, and Metabolism and the Vanderbilt Diabetes Center to the graduating medical student who has performed outstanding research in the area of diabetes and endocrinology. This award was established to honor Dr. Oscar B. Crofford for his contributions to the diabetes research at Vanderbilt and throughout the world.

DEAN'S AWARD. Presented to medical students distinguished by outstanding service to the School of Medicine and the community.

THE DEAN'S AWARD FOR RESEARCH. This award is presented to the graduating medical student who best exemplifies the attributes that lead to success in basic science or clinical research, namely creativity, dedication, productivity/multiple publications, and careful diligence.

EXCELLENCE IN EMERGENCY MEDICINE. The award for excellence in emergency medicine is given on behalf of the Society for Academic Emergency Medicine. This award recognizes a medical student who demonstrated outstanding ability in and commitment to the specialty of emergency medicine at Vanderbilt University Medical Center.

EXCELLENCE IN INFECTIOUS DISEASES. This award is presented by the Divisions of Infectious Diseases in the Departments of Medicine and Pediatrics to the student who has demonstrated outstanding aptitude and performance in clinical and investigative efforts in infectious diseases or microbiology.

EXCELLENCE IN PUBLIC HEALTH AWARD. This award is distributed by the Physicians Professional Advisory Committee (PPAC) of the United States Public Health Service (USPHS). The purpose is to recognize medical students who conduct public health work in their community and exemplify the USPHS and its mission to protect, promote, and advance the health and safety of our nation.

GERALD FENICHEL AWARD IN NEUROLOGY. Dr. Gerald Fenichel, professor of neurology and pediatrics, founded the Department of Neurology at Vanderbilt University Medical Center and served as chairman from 1969 to 2001. As one of the founders of the Child Neurology Society, his contributions to the fields of neurology and child neurology are immeasurable. This award is presented to a graduating medical student entering neurology or child neurology who has demonstrated outstanding aptitude for clinical neurology and a devotion to patient care.

J. DONALD M. GASS AWARD IN OPHTHALMOLOGY. This award is established in honor of Dr. J. Donald M. Gass, a graduate of Vanderbilt University School of Medicine, Class of 1957, and a renowned medical retina specialist. This award is given to a student who demonstrates excellence in ophthalmic education and research

GLASGOW–RUBIN CERTIFICATE OF COMMENDATION. This certificate is presented in recognition of women medical students who graduate as honor graduates, with special recognition to any female who is the top graduate. It serves to reaffirm the American Medical Women's Association's commitment to encouraging their continuing achievement.

JAMES T. GWATHMEY PRIZE IN ANESTHESIOLOGY. This award is presented to the graduating medical student who most clearly demonstrates the potential for excellence in academic anesthesiology. It is named after Dr. James Tayloe Gwathmey, a former Vanderbilt medical student who graduated in 1899 and went on to lead the creation of a new medical specialty called anesthesiology.

PAULA C. HOOS AWARD. The first-year class presents this award in recognition of excellence in student teaching in the basic sciences and to express appreciation for the assistance of members of the graduating class.

HOSPITAL AWARD OF EXCELLENCE. This award recognizes the fourthyear medical student, by the chief residents of the services, as having contributed most toward excellent patient care by demonstrating sensitivity, compassion, and concern in clinical responsibilities to patients of Vanderbilt University Medical Center. RICHARD B. JOHNSTON JR. AWARD. This award is presented to a graduating student entering pediatrics who has demonstrated excellence in academic scholarship and an extraordinary commitment to clinical medicine exemplifying the highest professional standards of the physician-scientist.

RUDOLPH H. KAMPMEIER PRIZE IN MEDICINE. The Kampmeier Prize is presented by the Department of Medicine to the graduate who, in the judgment of the faculty, best combines high academic achievement with clinical excellence, original scholarship, or research, and demonstrated potential for an academic career.

THE KAUFMAN PRIZE IN MEDICINE. This award honoring J. Kenneth Kaufman, M.D. '39, is presented to a graduating medical student who has demonstrated qualities of humaneness, dedication, and unselfish service in the study of medicine and will apply these qualities in medical practice.

THE TOM NESBITT AWARD. This award is presented by the Nashville Academy of Medicine to honor the outstanding service of Tom Nesbitt, M.D., a member of the academy and the 133rd president of the American Medical Association. This award is presented to the graduating medical student who demonstrates exemplary character and leadership and has an understanding of and appreciation for organized medicine.

DAVID N. ORTH AWARD IN ENDOCRINOLOGY. This award is presented by the Division of Diabetes, Endocrinology, and Metabolism and the Endocrine Society, the largest professional association devoted to all aspects of endocrinology, to a graduating medical student who has demonstrated outstanding performance in clinical or research endocrinology. The award honors Dr. David N. Orth for his contributions to and leadership in endocrinology. He served as director of Vanderbilt's Endocrinology Division and as president of the Endocrine Society.

THE ORTHOPAEDIC SURGERY CLERKSHIP AWARD. This award is presented by the Department of Orthopaedic Surgery to the student who has excelled in both the third and fourth year orthopaedic clerkships, and who has demonstrated outstanding potential in the field of orthopaedic surgery.

ROENTGEN AWARD. This award is given to a graduating medical student who has made important contributions in one of the radiological sciences during four years of study. Named for Wilhelm Conrad Roentgen, a pioneer in diagnostic radiology, the award recognizes discoveries in either clinical or research areas.

THE SCHOOL OF MEDICINE AWARD OF DISTINCTION. This award is presented to the student who has demonstrated outstanding leadership abilities in service to the School of Medicine.

THE H. WILLIAM SCOTT JR. PRIZE IN SURGERY. This award is presented to the graduating medical student who exemplifies the qualities of leadership, performance, and character reflecting the ideal surgeon.

JOHN L. SHAPIRO AWARD FOR EXCELLENCE IN PATHOLOGY. This award, given upon action of the Department of Pathology, recognizes outstanding student performance in pathology. It is given annually or otherwise depending upon action by the department and honors the memory of Dr. John L. Shapiro, who was a professor and chair of the Department of Pathology from 1956 to 1971. Dr. Shapiro remained an active participant in a variety of university and community activities, until his death on July 15, 1983.

MILDRED T. STAHLMAN AWARD. This award, honoring the pioneering spirit and achievements of Vanderbilt pediatrician Mildred Stahlman, is presented to the graduating student entering pediatrics whose performance exemplifies the highest standards of leadership, professionalism, and commitment to improving the lives of children.

TENNESSEE ACADEMY OF FAMILY PHYSICIANS AWARD. This award is presented in recognition of an outstanding student in family medicine.

THE LEONARD TOW HUMANISM IN MEDICINE AWARD. PRESENTED BY THE ARNOLD P. GOLD FOUNDATION. This award is given to a graduating student and a faculty member who demonstrate compassion and empathy in the delivery of health care, and who engender trust and confidence in both their patients and colleagues while adhering to professional ethical standards. STEN H. VERMUND AWARD IN GLOBAL HEALTH. This award recognizes the graduating medical student who has most demonstrated a strong commitment to improving the health of the people of or from a low- or middleincome country through distinguished scholarship, education, and/or contributions to the improvement of clinical care. The award was established in 2017 to honor Dr. Sten H. Vermund, who was the founding director of the Vanderbilt Institute for Global Health.

THE ALBERT WEINSTEIN PRIZE IN MEDICINE. The Weinstein Prize in Medicine is awarded to a student who has demonstrated high academic achievement, superior clinical competence, and the qualities of dedication and professionalism that characterize a good physician.

DAVID L. ZEALEAR PH.D. OTOLARYNGOLOGY SCHOLAR-INITIATIVE AWARD. This award is presented to a medical student who excels beyond clinical competence and who has become distinguished for outstanding effort towards the academic mission of otolaryngology—research, teaching, and/or outreach.

Other Program Policies

Curriculum Evaluation

Curriculum evaluation at VUSM seeks to obtain information to determine if medical students are experiencing the best possible learning experiences during their medical school career. There are three major components to curriculum evaluation at VUSM:

- Course evaluation at Vanderbilt examines how the design and organization of courses, clerkships, and immersions and their content helps medical students learn.
- Faculty evaluation examines the performance of teaching faculty, residents, and fellows in providing learning opportunities in which appropriate content is conveyed to medical students.
- Program evaluation examines the impact of the overall curriculum and the interaction of its components on medical student learning.

Course Evaluation Process

Course evaluation uses an eight-step evaluation process to examine how the design and organization of courses, clerkships, and immersions and their content helps medical students learn. More about this process is available online at *medschool.vanderbilt.edu/md-gateway/course-evaluation-process-overview/*.

Course Evaluation Policy

Students are required to complete each survey that they receive from the Office of Undergraduate Medical Education evaluation team. Students who do not complete surveys will be reported to the associate dean of undergraduate medical education and the Promotions Committee. Completing program and course evaluations is a vital part of the continuous improvement process at Vanderbilt. However, students may opt out of any VUSM-developed evaluation survey and/ or any assigned VUSM-developed evaluation focus group. Any student wishing opt-out must request a meeting with the associate dean for undergraduate medical education to discuss the student's reasons for wanting to be excused from the requirement to respond to a survey or participate in a focus group. This process must be started before the day the survey closes, which is disclosed to the student on the day he/she receives the survey request.

The full course evaluation policy is available online at *vanderbi.lt/vusmcourseeval*.

Leave of Absence

A student may request a leave of absence from school for any reason (personal, medical, maternity/paternity, research, dual degree, etc.), subject to the approval of the associate dean for medical student affairs (ADMSA). The student must submit a written request to the ADMSA, outlining the nature of the requested leave and providing the starting and ending dates. Students may consult with Vanderbilt University Student Access Services (vanderbilt.edu/student-access/) when contemplating a leave of absence, and the ADMSA may consult with student access services when evaluating a request for leave of absence. The ADMSA may grant the student a leave of absence for up to one year, as long as the student is in good academic standing. Prior to leave, a plan for re-entry into the curriculum and meeting requirements for graduation should be outlined with the ADMSA, with the assistance of the associate dean for undergraduate medical education (ADUME) as indicated.

A student on leave of absence may request an extension of the leave beyond one year, subject to the approval of the ADMSA. The student must submit a written request outlining the nature of the requested extension and providing a new ending date. A request for extension of a leave of absence must be submitted to the ADMSA at least three months before the ending date of the approved leave. Requests may be made for additional extensions using the process outlined above.

Upon return from LOA, the student must complete a background check and update immunization records and all other compliance requirements.

Students who are not in good academic standing may request a leave of absence using the request procedure described above, but approval of the leave may be granted only by the student's Promotion Committee (the request is presented to the Promotion Committee by the ADMSA). Leave of absence form is available at *medschool.vanderbilt.edu/ md-gateway/forms*.

Students pursuing the Ph.D. as part of the Medical Scientist Training Program are not required to request a leave of absence when entering the Ph.D. phase of the program.

Attendance Policy for Doctor of Medicine

REQUIREMENTS FOR ALL DOCTOR OF MEDICINE STUDENTS

Student Absence Request forms are available online at *medschool. vanderbilt.edu/md-gateway/forms.* Required information includes the date, time, and reason for the absence request. The signatures of (1) the block/clerkship/course director and (2) the associate dean for medical student affairs (ADMSA) or the assistant dean for medical student assessment (ADA) are required. Note that for the Immersion Phase, the associate dean for medical student affairs (ADMSA) and the assistant dean for medical student assessment (ADA) are notified of all absences that are approved, but their signatures are not required.

Important Considerations:

- Students should not make travel arrangements prior to receiving notification of the outcome of their request. Approval is not granted just because travel arrangements have been made.
- Unapproved or denied absences are not allowed.
- Students are held responsible for didactic material they miss during approved absences. Make-up work for other activities may be required by course faculty/directors.

Examples of situations in which make-up work is not allowed, and the student's grade is affected include:

- Absences for which no request was made.
- Absences for which a request was made and denied.

PHASE-SPECIFIC REQUIREMENTS

Foundations of Medical Knowledge Phase

Students are apprised of the attendance policies for a course on the first day that the class meets. Standards are provided in writing in course syllabi and in most classes are reviewed verbally by course directors. It is the student's responsibility to understand which sessions are mandatory, the definitions of excused absences and personal days, and the consequences for unexcused absences.

It is expected that students will arrive on time for courses and other school-related obligations and demonstrate respect for teachers, fellow students, and others while participating.

- Unless stated otherwise, students are not required to attend general lectures in FMK courses. However, because many topics are covered only in lectures and many exam questions are derived directly from this material, attendance in lectures is strongly encouraged.
- 2. Student attendance at all small group sessions is mandatory. Small groups may include discussion or presentation sessions, team-based or case-based learning sessions, laboratory sessions, etc., as defined for individual courses.
- 3. Student attendance at all examinations is mandatory. If, due to extenuating circumstances, a student cannot be present for an examination, the student must notify the course administration, the assistant dean for medical student assessment (ADA), and the associate dean for medical student affairs (ADMSA) immediately. The student should work with course leadership/administration to make arrangements to satisfy the examination requirement.
- 4. Student attendance may be required at other sessions, as indicated by the course administration.
- 5. *Excused Absences from Mandatory Sessions*. Students may be excused from mandatory sessions on the basis of serious health issues, family emergencies, religious holy days, or presentation of their work at meetings (other similar circumstances to be handled on a case-by-case basis). In these circumstances, students must notify the course administration/course director and ADMSA or ADA and complete the absence request form at least four weeks in advance (or as soon as possible for an emergency) for each active course or clerkship in which sessions would be missed if they are requesting an absence. If the mandatory session

is a small group, students also should notify their group facilitator and group mates. If the student will miss clinical duties, he/she must also alert the supervising resident. It is recognized that in some situations students are not able to provide advance notice. In these circumstances, students should contact the course administration as soon as possible to explain why they were unable to attend.

- 6. Foundations of Medical Knowledge Phase Personal Days. It is recognized that life events that are neither serious health issues nor family emergencies may affect a student's schedule. In these cases, students may request one or more personal days in order to miss a mandatory session. Permission for absence may be granted at the discretion of the individual course directors. The rules that govern the use of personal days are:
 - Students must request permission from the course administration for each active course in which sessions would be missed in writing and in advance using the appropriate Student Absence Request form.
 - If granted an absence, students who anticipate missing a mandatory small group session due to taking a personal day must notify their group facilitator/clinical team/ classmates at least 4 weeks in advance that they are not attending.
 - Students are held responsible for material they miss when taking personal days. At the discretion of the course administration, students may have to complete a make-up assignment on material they missed.
 - During the FMK phase, students are allowed to take up to a total of three (3) personal days (not more than one day per block).
 - Personal Day Blackout Periods. Students may not use a personal day to extend a school holiday (not including normal weekend breaks). Also, students may not use personal days to miss mandatory sessions, including:
 - o Examinations
 - o First day of any class
 - o Orientation
 - o Last day of class before an assessment in a block
 - o Other mandatory sessions as determined by course leadership/administration
- 7. Unexcused Absences from Mandatory Sessions. All absences from mandatory sessions that are not defined above as excused or personal days are considered unexcused absences. Unexcused absences are unacceptable and may have a negative effect on the student's competency domain evaluation and/or overall grade in the class.

Foundations of Clinical Care (FCC) Phase

Students are apprised of the attendance policies for a course on the first day that the class meets. Standards are provided in writing in course syllabi and in most classes are reviewed verbally by course directors. It is the student's responsibility to understand which sessions are mandatory, the definitions of excused absences and personal days, and the consequences for unexcused absences.

It is expected that students will arrive on time for courses and other school-related obligations and demonstrate respect for teachers, fellow students, and others while participating.

 During the clerkships, students are excused from clinical duties so that they may attend clerkship didactic sessions. Students are strongly encouraged to attend unless there is an urgent clinical situation or one that enriches their education.

- 2. Student attendance for assigned clinical duty is mandatory. Similarly, student attendance at all classroom sessions that include patients (actual or simulated) is mandatory. These sessions are not recorded due to concerns regarding patient privacy.
- 3. Student attendance at all examinations is mandatory. If, due to extenuating circumstances, a student cannot be present for an examination, the student must notify the course administration, the assistant dean for medical student assessment (ADA), and the associate dean for medical student affairs (ADMSA) immediately. The student should work with course leadership/administration to make arrangements to satisfy the examination requirement.

Regarding NBME shelf clerkship examinations, in special circumstances, students may be granted permission to take a missed shelf exam on one of two the standard makeup dates (January and June).

- 4. Attendance is mandatory for all sessions of the longitudinal days during the FCC phase, including all large group and small group sessions.
- 5. Student attendance may be required at other sessions, as indicated by the course administration.
- 6. Excused Absences from Mandatory Sessions. Students may be excused from mandatory sessions on the basis of serious health issues, family emergencies, religious holy days, or presentation of their work at meetings (other similar circumstances to be handled on a case-by-case basis). In these circumstances, students must notify the course administration/course director and ADMSA or ADA and complete the absence request form at least four weeks in advance (or as soon as possible for an emergency) for each active course or clerkship in which sessions would be missed if they are requesting an absence. If the mandatory session is a small group, students also should notify their group facilitator and group mates. If the student will miss clinical duties, he/she must also alert the supervising resident. It is recognized that in some situations students are not able to provide advance notice. In these circumstances, students should contact the course administration as soon as possible to explain why they were unable to attend.
- 7. At the discretion of the senior resident and the attending physician on the ward team, students may occasionally be given time off from clinical duties when working conditions permit. In the event such time off is expected to last longer than 24 hours, a signed Student Absence Request form must be submitted per the instructions above.
- 8. A student is not allowed to miss more than two days, and also not allowed to miss required sessions in any FCC block (see "Unexcused Absences from Mandatory Sessions,"below). A student may petition to be permitted more than two days in a given rotation. If granted, the student must submit an absence form describing the full extent of absence and must arrange to make up the additional time.
- 9. Unexcused Absences from Mandatory Sessions. All absences from mandatory sessions that are not defined above as excused or personal days are considered unexcused absences. Unexcused absences are unacceptable and may

have a negative effect on the student's competency domain evaluation and/or overall grade in the class.

10. While "personal days," as described above, are permitted during the FMK phase, they are not allowed during the FCC phase. Students are expected to be present for all clinical and educational duties, unless express permission is requested and approved according to the conditions described in FCC #1-9 above.

Immersion Phase

Introduction

The mandatory sessions for each course can be found in the course syllabus. It is the student's responsibility to understand which sessions are mandatory, the definitions of excused absences, and the consequences for unexcused absences.

- 1. Student attendance at Immersion Weeks is mandatory.
- 2. Student attendance at Foundations of Healthcare Delivery, Learning Communities, and Research face-to-face sessions is mandatory.
- 3. Student attendance for assigned clinical duty (as determined by the course director) is mandatory. If any clinical session is going to be missed, the student must complete the Absence Request Process (detailed below). A student cannot miss more than two clinical assigned sessions.
- 4. A student cannot miss other sessions (e.g. lecture, simulation, etc.) deemed mandatory by the course director. The following are considered mandatory in every Immersion Phase course, unless otherwise indicated by the course director:
 - First day of course
 - Course orientation
 - Examinations
 - Any day that extends a school holiday (except normal weekend breaks)
- 5. Student attendance at other sessions is at the discretion of the course director.
- 6. Excused Absences from Mandatory Sessions for Non-Emergent Reasons. Students may be excused from mandatory sessions on the basis of religious holy days, interviews for residency, presentation of their work at meetings, or other similar circumstances handled on a case-by-case basis. In these circumstances, students must complete the Absence Request Process (detailed below) and request approval from the the course administration/course director and ADMSA or ADSAA and complete the absence request form at least 4 weeks from the start of the course. Students must also notify the clinical team (e.g. supervising resident and/or attending). While students may submit requests to be absent for other life events (e.g. weddings, non-emergent family events, etc.) these absences are highly discouraged and are likely not to be approved given their impact on both the student learning experience and the clinical learning environment. Students are encouraged to plan their flex months to accommodate these major life events.
- 7. Excused Absences from Mandatory Sessions for Emergent Reasons. It is recognized that in some situations (e.g., serious health emergency, family emergency) students are not able to provide advanced notice of an absence. In

these circumstances, students should contact the course administration as soon as possible to explain the absence. The Absence Request Process (detailed below) must be completed as soon as possible.

8. Unexcused Absences from Mandatory Sessions. All absences from mandatory sessions that are not defined above as excused are considered unexcused absences. Unexcused absences are unacceptable and have a negative effect on the student's competency domain assessment and/ or overall grade in the course. Students may fail the course.

Absence Request Process

Students may request permission to miss mandatory sessions due to circumstances outlined above. To make a request, the student must complete the VUSM Immersion Phase Absence Request form at least 4 weeks in advance of the start of the course (or as soon as possible in the case of an emergency). To complete the form the student must:

- Visit the MD Gateway (medschool.vanderbilt.edu/mdgateway/) to access the Immersion Phase online absence request form.
- 2. Complete the online form. All requested information must be entered, including information regarding the primary and longitudinal course if applicable (Research, PLAN, Learning Communities, and FHD) for which you will be absent.

The form will be automatically routed to the appropriate course director(s) and the Immersion Phase team. The course director and Immersion Team will review the student's request and approve or deny it. Once the decision is finalized, the student will be notified.

Student Work Policy

Medical Student Duty Hours

In order to encourage a well-rounded, balanced journey through the clinical years of medical school, it is the policy of Vanderbilt University School of Medicine that duty hours of medical students should reflect the general guidelines set forth for residents by the ACGME. We expect that:

- 1. Total required educational and clinical activities should not exceed eighty hours per week.
- 2. Clerkship and Immersion phase students should take one day off in seven; this is typically a weekend day.
- 3. Whenever possible, we suggest that when students take in-house call, they should be allowed to leave at noon of the following day, but should be expected to return for required didactic components of the clerkships or Immersion courses.

It is also expected that supervising house staff and attending physicians are sensitive to student fatigue and total number of hours spent on clinical and educational activities.

Extracurricular Work or Activities

The School of Medicine does not regulate the outside work or activities of its M.D. program students, although it does take the firm position of discouraging outside work. No outside commitments may be assumed by medical students that may compromise their responsibilities at the medical school. If the outside obligation creates a conflict of interest, a student may be required to discontinue it.

Student Pay for Work Performed for Credit

Students may not be paid for work performed as part of their elective or required course work for credit. Exceptions to this rule are made only when students are in special programs, such as students on military scholarships, students in funded graduate certificate programs, students in funded M.D./Ph.D. programs, students in MIDP completing certain industry internships, and students in the Oral Surgery program when acting as residents.

Transportation

During their medical school careers, students may be placed for educational experiences in clinical sites located away from the Vanderbilt University campus. Students should be prepared to drive up to 35 miles from the Vanderbilt University campus to reach off-site placements. Students are responsible for their own transportation to and from all clinical sites for educational experiences, including all costs associated with that travel.

VUSM Doctor of Medicine Program Admission Bylaws

Article I—Overview and Mission Statements

Section 1—Introduction: This document is meant to provide Vanderbilt University School of Medicine (VUSM) and constituents with the authority, structure, and procedure for the admissions process for students applying to the MD program. This includes the Regular MD program as well as unique training pathways which include the Medical Scientist Training Program (MSTP), the Medical Innovators Development Program (MIDP), and training for Oral Maxillofacial Surgery (OMFS). The overarching principles driving the MD admissions process are enunciated below:

Section 2-VUSM Mission Statement:

The vision of Vanderbilt University School of Medicine is to shape a future in which all persons reach their full health potential.

The core values of Vanderbilt University School of Medicine are integrity, inclusion, humility, mutual respect and excellence.

The mission of Vanderbilt University School of Medicine is to catalyze the advancement of impactful discovery, servant leadership, and lifelong learning.

In order to carry out this mission, we make these strategic commitments:

- To nurture the growth of clinicians, scientists and educators who will serve and lead their local, national and global communities.
- To create, implement and disseminate new knowledge that expands understanding of health, disease and healthcare systems.
- To teach, learn and provide compassionate, personalized caring of the highest quality for every patient who seeks our service and to strive to achieve health equity in the populations we serve.
- To embrace a culture of lifelong learning, critical thinking, and innovation so that we will continuously improve in all we do.
- To build a diverse community of faculty, staff and students that expands the richness of our learning environment and enhances excellence in all of our endeavors.

Section 3—VUSM Admissions Mission Statement: Vanderbilt University School of Medicine (VUSM) seeks to matriculate a diverse group of academically exceptional students whose attributes and accomplishments suggest that they will be future leaders and/or scholars in medicine. To accomplish the stated goal of the VUSM Admissions Mission Statement, the Admissions Committee provides a review of each candidate by multiple members of the faculty who are broadly representative of the faculty. The committee uses a holistic approach to evaluate an array of applicant attributes, including academic excellence, personal characteristics, accomplishments in research, leadership, service to others, contribution to diversity (gender, race, ethnicity, sexual orientation, socio-economic background, geographic origin), and participation in extracurricular activities.

Section 4—Authority of the Admissions Committee: The VUSM Admissions Committee is charged by the Dean of the School of Medicine to select all members of each entering VUSM medical student class and is granted sole authority in making all related decisions.

Applicants should be aware of, and are referred to, the VUSM Technical Standards which can be found in the VUSM Catalogue.

Article II—The Overall Structure of the Admissions Process.

The structure of our admissions process is intended to provide the framework upon which we can evaluate and recruit an outstanding group of diverse students to VUSM in the fairest and most efficient method possible.

Section 1—Director and Assistant Director of Admissions:

1. The Director works closely with the Senior Associate Dean for Health Sciences Education in the School of Medicine, the Faculty Co-Chairs of the Admissions Committee, the Admissions Leadership Team, and individual members of the Admissions Committee. The Assistant Director reports to the Director of Admissions.

- 2. The following are the roles/duties of the Director and Assistant Director of Admissions:
- a. Collaborate with the University Enrollment Affairs team in modeling admissions and scholarship strategies toward achieving goals established annually by the Dean of the School of Medicine.
- b. Manage all operations related to the admissions process.
- c. Work with the Co-Chairs of the Medical School Admissions Committee to ensure interviewers and reviewers are properly trained for their roles.
- d. Evaluate the admissions process, along with the Co-Chairs of the Admissions Committee and the Admissions Leadership Team, to ensure a continuous quality improvement of said process.
- e. Assign applicants for review by the various sub-review committees and the Admissions Committee with guidance from the Co-Chairs.
- f. Supervise the logistics of the interview day.
- g. Schedule training sessions for review sub-committees and Admissions Committee members and interviewers.
- h. Manage the Admissions Process compensation program.
- i. Create a communications flow that includes suspected, invited and matriculated applicants.
- j. Plan and oversee Second Look Weekend for admitted students and Pre-Med PreVU for pre-med advisors.
- k. Oversee the admissions portal and coordinate the technical standards of the portal with the Academic Affairs Process and Solution Implementations team.
- I. Monitor application flow and note admissions trends.
- m. Coordinate the waitlist selection program, with the Faculty Co-Chairs of Admissions and members of the Admissions Committee.
- n. Interface with the Association of American Medical Colleges (AAMC) and the Group on Student Affairs (GSA) regarding admissions.
- o. Engage in other recruitment efforts.

Section 2—Faculty Co-Chairs of Medical School Admissions:

- 1. Selection and tenure of Faculty Admissions Co-Chairs
- a. Two Vanderbilt University School of Medicine faculty members shall serve as the Faculty Co-Chairs of the Medical School Admissions Committee. Ideally, these two candidates will represent diverse backgrounds and experiences.
- b. The Senior Associate Dean for Health Sciences Education will appoint the Co-Chairs with input from the Dean of the VUSM, leadership from the Office of Diversity Affairs, prior Admissions Committee Co-Chairs and the Director of Admissions.
- c. Co-Chairs will serve five-year terms. These terms should be staggered so that an experienced individual is always in office. Each cochair may serve again in the position after a gap of at least one year. An individual can serve no more than two five-year terms.

2. The following are the roles/duties of the Co-Chairs. In all cases, the Co-Chairs will collaborate with the Director and Assistant Director of Admissions:

- a. Oversee and continually review the entire admissions process, including MSTP, MIDP, and OMFS applicants, with input from the Admissions Leadership Team. The Admission Leadership Team is described below in Section 3.
- b. Recruit application review committee members, Admissions Committee members, and interviewers. Special emphasis is placed on recruiting a diverse group of faculty members from all departments across the medical school campus. A coordinated effort is made to ensure all VUSM faculty know the opportunities to be engaged with admissions by encouraging participation through multiple avenues (as outlined in our Standard Operating Procedures).
- c. Conduct training sessions for the committees and interviewers.
- d. Organize and lead committee meetings. The specific duties for each committee are given below.
- e. Monitor, along with the Director of Admissions, the flow of applications through the review process. This action/function is to ensure the fair and efficient review of applications over the admissions season:
 - i. Guide the assignment of applications to the Screening Review Subcommittee (SRS) for review of a subset of applications received, Interview Review Subcommittee (IRS) for selection for Interview, and Admissions Committee, which is handled by the Director or Assistant Director of Admissions.

ii. Determine criteria for automatic invitation to complete a secondary application as well as criteria for applications that will go directly to the Interview Review Subcommittee (IRS) upon completion of the secondary application.

iii. Provide additional review of all applicants not offered a secondary application to ensure a holistic review for determination of secondary application offer.

iv. Ensure that reviews by committee members are thoroughly conducted and are submitted in a timely manner.

v. Review the following:

 SRS sub-committee scoring to determine which applicants should be considered for interview

2. IRS sub-committee scoring to determine which applicants should be invited to interview

3. Admissions Committee scoring based upon review of files and review of class composition to determine which applicants will be selected to join the incoming class to meet the strategic goals of the School of Medicine.

Section 3—Admissions Leadership Team:

1. The Admissions Leadership Team, chaired by the Faculty Co-Chairs of the Admissions Committee, includes a representative Dean from the Office of Diversity and Inclusion, the Director of Admissions, the Assistant Director of Admissions, and decision makers and faculty leaders that represent the MSTP, MIDP, and OMFS programs.

2. The Admissions Leadership Team communicates regularly and meets as needed but no less than bimonthly to monitor ongoing results of the admissions process and make improvements in the process as indicated.

3. Ongoing communication is provided to the Senior Associate Dean for Health Sciences Education.

Article III—Committees

The Admissions Committee and the following subcommittees review applications in a holistic manner to build a class that reflects the VUSM mission. Information and analyses from committee members are compiled and exchanged over the multi-step review process. In selecting members for all committees, the chairs will strive to achieve the broad diversity that represents the distinctiveness of the community and assures holistic perspectives in reviewing applicants. Authority to review applications in the subcommittees has been vested by the Admissions Committee.

Section 1—Screening Review Subcommittee (SRS):

1. This subcommittee is made up of 20-28 faculty members recruited from across the VUSM campus.

2. Members serve three-year terms but are eligible for re-selection up to nine years.

3. Members screen primary applications and secondary essays to determine which candidates will be forwarded to the Interview Review Subcommittee (IRS).

4. Members will receive funds to their department after achieving a baseline number of reviewed applications.

Section 2-Interview Review Subcommittee (IRS):

1. This subcommittee is made up of 24-30 faculty members recruited from across the VUSM campus.

2. Ex officio members include the Associate Dean of Medical Student Affairs and a faculty representative Dean from the Office of Diversity Affairs. Ex-officio members have no vote on this subcommittee.

3. Subcommittee meetings are led by the Faculty Co-Chairs, who have voting privileges.

4. Members serve three year terms but are eligible for re-selection up to nine years.

5. Members review and score application materials to provide a ranking to be used in the decision to invite candidates for interviews.

6. Members will receive funds to their department per application reviewed.

Section 3—Admissions Committee:

- 1. This committee is made up of 18-24 faculty members recruited from across the VUSM campus.
- 2. Membership includes faculty representation from MSTP, MIDP, and OMFS programs.
- 3. Ex officio members include the Associate Dean of Medical Student Affairs and a representative Dean from the Office of Diversity Affairs who have no vote on this committee.
- Committee meetings are run by the Faculty Co-Chairs, who have voting privileges.
- Faculty members serve three year terms but are eligible for re-selection up to nine years.
- 6. Members review all application materials including interview reports and provide a score that guides the decision for admissions.
- Faculty members review the proposed list of acceptances for approval.
 - This includes Regular MD, MSTP, and MIDP.
 - The OMFS process is integrated into the Council on Dental Accreditation (CODA) requirements for admission.
- Faculty members review the proposed wait list for approval.
 a. This includes Regular MD, MSTP, and MIDP. The OMSF process
- for selection is through the ACGME residency match. 9. Members will receive funds to their department per application reviewed.

10. Ten to twelve students serve on the Admissions Committee and represent Vanderbilt's student body. Student members apply every year. Applications are solicited and selections made by the Director of Admissions, with approval by the Faculty Admissions Co-Chairs and the Admissions Leadership Team. Final approval is based on the Associate Dean of Medical Student Affairs who ensures that the student member is in good standing. The student selection is based on commitment to admissions and may come from a student in any phase of medical education, after successful completion of first year. Four students are assigned applications to review for a given meeting. The student reviewers attend the meeting and discuss applicants and are voting members of the committee for applicants that they have reviewed. Faculty are always in the majority at Admissions Committee meetings.

Article IV—Organization of Admissions Review

A commitment is made to ensure a candidate's file is reviewed by several faculty members. Faculty members should not evaluate the student in more than one part of the process in situations where the faculty member participates in several phases of the process. During admissions training, the Faculty Co-Chairs state the VUSM conflict of interest policy and how committee members and interviewers can recuse themselves when handling a candidate that might be a familial or other relationship. The Faculty Co-Chairs remind committee members and interviewers that all admissions decisions are made free from political or financial influence. In all phases of the review process the Faculty Co-Chairs monitor the process to ensure that no undue influences impact the process of applicant evaluation or selection.

Section 1—Screening Review Subcommittee (SRS) Process for Regular MD only:

1. All verified applications received from AMCAS are initially assessed for the opportunity to submit a secondary application and move forward for further review. The highest scoring group of applicants that return a secondary application are immediately presented to the IRS. All applications that have completed a secondary application and do not fall into the group that goes directly to the IRS are further evaluated and are screened by at least two faculty members of the SRS.

2. Regular MD candidates will submit a secondary fee. A secondary fee exception for financial hardship is found on the secondary application. Waivers are approved by the Director of Admissions.

3. The decision to change the secondary fee is made by the Senior Associate Dean for Health Sciences Education, with consultation by the Admissions Leadership Team.

4. Applicants who do not move to the IRS will have opportunity for additional review by the Faculty Co-Chairs of Admissions to ensure a holistic review before being rejected.

5. Analyses from screeners are forwarded with the application to reviewers in subsequent phases of the admissions process.

6. Members must recuse themselves in any conflict of interest with any application.

7. Screeners may identify qualified applicants in the Regular MD pool who also meet criteria for the MSTP or the MIDP programs and notify the program leadership.

Section 2—Interview Review Subcommittee (IRS) Process for Regular MD only:

1. Quorum is defined as having 50% plus one of the voting members present.

2. Two IRS subcommittee members independently review and score each application, using a structured rubric that reflects a holistic evaluation. The applications are scored from 0-9 with 9 being the highest.

3. Candidates with a greater or equal to a 3-point discrepancy in the evaluation score will be brought up for discussion at a biweekly meeting.

4. Any member may request no less than 24 hours before the meeting to bring up for discussion (and possible vote) a candidate.

5. The committee may vote to change the candidate's score if a vote is called for by a voting member and seconded by another voting member. The vote is seen as the final score for the candidate at that phase of the application process.

6. If a member is not at the IRS meeting, and his/her candidate is discussed, an automatic vote will be called.

7. Applicants will be invited to interview based on the IRS score and the number of interview slots available, with a focus on applicants who fit the Vanderbilt mission.

8. Members must recuse themselves in conflict of interest with any application.

Section 3—Admissions Committee Process for Regular MD only:: 1. Quorum is defined as having 50% plus one of the faculty voting members present.

2. Three faculty and one student committee members individually review and score applicants using a standard rubric that reflects a holistic evaluation. The applications are scored from 0-9 with 9 being the highest.

Candidates with a greater or equal to a 3-point discrepancy in the evaluation score will be brought up for discussion at the monthly meeting.

4. Any member may request no less than 24 hours before the meeting to bring up for discussion (and possible vote) a candidate.

5. The committee may vote to change the candidate's score if a vote is called for by a voting member and seconded by another voting member. The vote is seen as the final score for the candidate at that phase of the application process.

6. If a member is not at the Admissions Committee meeting, and an assigned candidate is discussed, an automatic vote will be called.

Members must recuse themselves in conflict of interest with any application.

Section 4a. Interview for Regular MD only:

1. The interview pool will be comprised of faculty from the School of Medicine who have attended training on appropriate interview techniques. Effort will be made to ensure a diverse interview pool, from various parts of the School of Medicine.

2. A candidate will have two interviews, an open file interview and a behavioral-based interview, on their interview day:

a. For the open file interview, the interviewers will have access to the file of the applicant in order to foster a conversation that allows the applicant to expand upon the activities and experiences that have shaped their journey and to explore those activities and experiences that are not be found in the application.

b. A behavioral based interview will allow faculty to learn how the candidate responds in different situations. The interviewers query the applicants using a standard list of questions that allow them to address components of character such as resilience, curiosity, and ethics. Behavioral-based interviewers will not have access to the file of the applicant with the goals of focusing the conversation on the scenarios presented and limiting bias in the assessment of behavioral decision making.

3. Non-executive faculty will receive funds to their department for their efforts.

Section 4b. Interview for MIDP and MSTP:

1. Overview of the role of Medical Innovators Development Program (MIDP) and the Medical Scientist Training Program (MSTP) Subcommittees. The constitution of Subcommittees for the MIDP and MSTP provides a mechanism for the efficient and effective review of applicants to these specialized training programs. Each subcommittee includes faculty

members and students from the School of Medicine who have interest and expertise in the respective area. Each Subcommittee has representation on the Admissions Committee and presents evaluated and ranked applicants to the Admissions Committee for consideration for admission.

2. Application Procedure for Medical Innovators Development Program (MIDP) Admission. The MIDP admission process parallels that described for the regular M.D. program with additions that support the evaluation of applicants to this unique training program for PhD scientists in engineering and quantitative disciplines. A Subcommittee composed of faculty members and a medical student participate in the review of MIDP applicants. Applicants complete the AMCAS application with the addition that one of the required recommendation letters submitted must be from a research mentor or work supervisor who can describe the applicant's potential for and commitment to success as an applied physician-scientist. Once a complete AMCAS application is received, applicants are invited to complete the secondary application for regular MD applicants plus a 500 word MIDP-focused essay explaining the reasons the applicant is interested in joining the MIDP and how the MIDP helps the applicant achieve his or her career goals. Prior to being offered an in person interview applicants will complete a Skype interview. Selected MIDP applicants are invited to an on-site Interview/Design Challenge that occurs the day prior to participating in an admissions interview day that is identical to that of regular MD applicants. Interviewed applicants are reviewed, discussed, and ranked by members of the MIDP Subcommittee who make recommendations to the Admissions Committee concerning which applicants should be offered admission. These ranked applicants are presented to the Admissions Committee by the MIDP Subcommittee representative who also serves on the Admission Committee.

3. Application Procedure for Medical Scientist Training Program (MSTP) Admission. The MSTP Admission process parallels that described for the regular MD program with additions that support the evaluation of applicants to this program that provides integrated training for both the MD and PhD degrees. A subcommittee composed of 20-25 faculty members and four MSTP students participate in the review of MSTP applicants. Once a complete AMCAS application is received, applicants complete the secondary application for MD application plus an original works section that is populated with presentations, abstracts, and publications by the applicant. Applicants also indicate their research area interests. A subset of the MSTP Subcommittee screens these applications based on the quality of research experience, academics, leadership potential, service, medical exposure, strength of recommendation letters that speak to the candidate's aptitude for a career as a physician-scientist, motivation for the MD-PhD training pathway leading to a career as a physician-scientist. Selected applicants are invited for an interview, the process of which is distinct from that of regular MD admissions. Interviewees have 5-7 interviews that include a member of the MSTP Leadership Team, 2 admissions subcommittee members, an MSTP student, and 2-4 faculty interviewers who represent the area of the applicant's research interests. Interviewed applicants are reviewed, discussed, and ranked by the entire subcommittee who make recommendations to the Admissions Committee concerning which applicants should be offered admission. These applicants are presented by the subcommittee representatives who sit on the Admissions Committee.

Section 5—Acceptance Process:

1. Twice each admissions season, ordinarily in December and February, all applicants reviewed by the Admissions Committee are considered for acceptance by the Admissions Committee with admissions modeling assistance from the Vanderbilt University Enrollment Affairs team.

a. Applicants with an Admissions Committee score of 5 or above are judged to have attributes that are consistent with the School of Medicine mission statement.

b. Decisions to invite applicants for admission are based on Admissions Committee's scores, and guided by enrollment goals, including gender balance and holistic composition of the class.

c. The Admissions Committee will nominate two members to attend the admissions modeling meeting to determine a proposed slate of admissions decisions. The same two members will attend both the December and February meetings. Also in attendance will be the Co-Chairs of the Admissions Committee as well as the Director and the Assistant Director of Admissions.

d. The Admissions Committee Co-Chairs will present the proposed slate of admission decisions to the Admissions Committee for approval of the final list for admission offers after the December and February meetings.

2. Students not accepted in December are reconsidered for acceptance in February. If students are not accepted at either meeting, they may be placed on a waitlist, unless their score deems them inadmissible into the class. The composition and order of the waitlist is proposed by the Co-Chairs of the Admissions Committee and the two Admissions Committee members selected to participate in the admissions modeling meeting. The proposed waitlist is presented to the Admissions Committee by the Co-Chairs for approval.

a. Admissions Committee reviews the proposed list of acceptances developed for approval, including Regular MD, MSTP, MIDP, and OMSF program applicants.

b. Acceptance into the class is free from political or financial influence. Admissions does not discriminate on the basis of age, creed, gender identity, national origin, race, sex, or sexual orientation. Admitted applicants possess the intelligence, integrity, and personal and emotional characteristics necessary for them to be successful at VUSM and become competent physicians.

3. Immediately after this both the December and February meeting, members of the Admissions Leadership Team notify accepted applicants via telephone call or email, and follow this with an invitation in writing. Invited applicants have two weeks to accept invitations; acceptances are not binding and deposits are not required.

4. The decision to change the deposit for admissions is made by the Senior Associate Dean for Health Sciences Education, with consultation by the Admissions Leadership Team.

5. An admitted candidate can request to defer their acceptance for a year; the Senior Associate Dean for Health Sciences Education can approve or deny the request. Requests should be made by April 15th.

7. Admissions are conditional based upon the satisfactory criminal background check and verification of a verified baccalaureate degree upon matriculation.

8. The criminal background check is performed by the Director of Admissions, in concordance with the Criminal Background Check policy.

9. The Admissions Committee will have the final authority to admit candidates from the Medical Scientist Training Program (MSTP), Medical Innovators Development Program (MIDP), and Oral Maxilliofacial Surgery Program (OMFS).

Section 6-Waitlist:

1. The Co-Chairs of the Admissions Committee identify applicants as needed from the approved, ranked waitlist so as meet the enrollment goals of the Admissions Committee, including total number of students in the class, gender balance, and broad diversity of the class. These invitations generally occur beginning in late April and may continue as needed until the class matriculates.

2. Admissions are conditional based upon the satisfactory criminal background check and verification of a verified baccalaureate degree upon matriculation

3. The criminal background check is performed by the Director of Admissions, in concordance with the Criminal Background Check policy.

4. Waitlisted applicants will be rejected after the class matriculates in July.

Bylaws for the Undergraduate Medical Education Committee VUSM Doctor of Medicine Program

Article I-Overview and Charge

Section 1—Introduction: These bylaws establish the authority, structure, and goals of the Vanderbilt University School of Medicine (VUSM) Undergraduate Medical Education Committee (UMEC), and outline the processes and methodologies used to obtain those goals.

Section 2—Charge: The UMEC UMEC is charged by the Dean of the School of Medicine to provide oversight and governance of the program leading to the MD degree. UMEC reports to the dean through the associate dean for undergraduate medical education (UME) and the senior associate dean for health sciences education (HSE), and along with the dean holds final authority for the curriculum as a whole. This includes oversight of the design and delivery of the MD curriculum and the authority to establish and monitor policies governing all aspects of the program, including admissions, student affairs, curriculum, assessment, progress and promotions, and learning environment.

Section 3—Goals: The goals of the UMEC are to assure that the MD program is aligned with the VUSM mission statement, that the execution of the program achieves its stated goals, and that all aspects of the program comply with standards and elements established by the Liaison Committee on Medical Education.

Article 2-Composition and Structure of the UMEC

Section 1—Faculty and Staff Representatives: UMEC shall be composed of members of the School of Medicine faculty, to include:

• Two representatives from each of the six departments with required clerkships during the FCC phase (Medicine, Surgery, Pediatrics, Obstetrics/Gynecology, Psychiatry, Neurology). One representative from these core clinical departments will be a Chair, Vice Chair for education, or Core Program Director. The second core clinical representative should be elected by the faculty members of each department. Each serves a term of three years, and may serve up to two consecutive terms if re-elected by their departments.

• Six total at-large faculty representatives, four from non-core clinical and two from basic science departments, who are elected by the clinical departments and basic science departments respectively. Each serves a term of three years and may serve up to two consecutive terms.

• Two representatives from each phase of medical school (ordinarily, the faculty co-chairs of each phase team).

• One representative from each longitudinal element (Foundations of Health Care Delivery, Research, and Learning Communities).

• One representative from the Medical Scientist Training Program (MSTP) and one representative from the Medical Innovators Development Program (MIDP) programs.

• One representative from the Vanderbilt University School of Nursing (VUSN)

• One representative of the Vanderbilt University Medical Center (VUMC) clinical leadership recruited by the senior associate dean for HSE (e.g., Chief of Staff, Chief Medical Officer)

• Two representatives of the house staff recruited by the VUMC Designated Institutional Official

• One patient representative recruited from the Patient and Family Advisory Council.

Section 2—Ex officio Members: The senior associate dean for HSE, the associate and assistant deans for UME, the associate dean for medical student affairs, the assistant dean for assessment, the assistant dean for diversity, the assistant dean for educational design and informatics, and the Chair(s) of the student curriculum committee shall serve on UMEC as ex officio members. The director of program evaluation, the director of student records, and the director of the office of UME shall also serve as ex officio members. Voting privileges will be limited to the faculty representatives, including the phase team chairs; the student representatives, the patient representative and the house staff representatives. Other ex officio members are non-voting. A quorum will be constituted by 19 of 36 voting members.

Section 3—Structure of UMEC: UMEC shall consist of an Executive Committee, a Curriculum Monitoring Sub-Committee, and a Policy Sub-Committee. The Executive Committee is chaired by the associate dean for UME and consists of the two sub-committee co-chairs, the associate dean for medical student affairs and the senior associate dean for HSE. The Executive Committee is responsible for monitoring the progress of the sub-committees and for monitoring UMEC elections to ensure that these comply with these by-laws. It will oversee the activities of all of the teams that execute and support the curriculum (Phase Teams, Longitudinal Element Teams, Program Evaluation Team, etc.) and will also be responsible for planning the Annual Curriculum Summit.

Each voting representative on UMEC will be assigned to one of the two subcommittees. Faculty co-chairs will serve terms of three years, with the option of serving two consecutive terms. The chairs shall be responsible for all activities of their sub-committees.

Article 3—UMEC and Sub-Committee Functions

Section 1—Policy Sub-Committee: The policy sub- committee will meet every other month, opposite meetings of the full UMEC. It shall carry out the following responsibilities:

- a. Maintain an inventory of all policy related to the MD program, including policies related to the curriculum, student affairs, learning environment and progress and promotions.
- b Review each policy on a regular basis, at least every three years, or sooner if issues arise.
- c. Annual review of LCME standards and elements related to the MD program to ensure existing policies remain in compliance.
- Recommend changes to policy as needed, to be presented for approval to the full UMEC.
- e Craft new policies as necessary, in response to internally identified needs or external compliance issues. These will be presented to the full UMEC for discussion and approval.

Section 2—Curriculum Monitoring Sub-Committee: The curriculum monitoring sub-committee will meet every other month opposite the full UMEC. It shall carry out the following responsibilities:

- Conduct annual reviews of course and longitudinal element evaluations as presented by the respective phase or element teams.
- b. Prepare and present annual phase and longitudinal element reviews for the full UMEC.
- c. Request and review reports and recommendations from content thread teams as needed.
- d. Review long-term and short-term program evaluation data.
- e. Annual review of LCME standards related to delivery of the curriculum.
- f. Recommend changes in courses and programs based on above reviews and present any major recommendations for change to UMEC for approval. (For example, major change in course length, content areas, teaching and/or assessment approaches.)

Section 3—UMEC (Full Committee): The full committee will meet every other month. Meetings will be devoted to reports from the Curriculum Monitoring and Policy Sub-Committees and to issues identified by the Executive Committee or the Sub-Committees that require discussion and decisions. The agenda will be determined by the UME Executive Committee. UMEC will carry out its responsibilities via the following functions:

- Review, revise and/or approve any recommendations for major changes in policy as recommended by the Policy Sub-Committee.
- b. Review, revise and/or approve new policies as recommended by the Policy Sub-Committee.
- c. Request that the Policy Sub-Committee make revisions to existing policy or request creation of new policies if the need emerges from internal VUSM discussions or review of compliance requirements by the UME Accreditation standards committee.

- d. Review and approve annual phase team and longitudinal element reports, along with recommendations that might emerge from the Curriculum Monitoring Sub-Committee.
- e. Approve plans for major changes in courses, new courses or segments of the curriculum, as defined in Article 3: Section 2: item f above.
- f. Review annual program level evaluation data, including but not limited to the AAMC Graduation Questionnaire, the Y2Q survey, the annual VUSM learning system survey, USMLE scores, aggregate promotions and progress data, and results of annual assessment events, such as EPA weeks.
- g. Recommend changes to the curriculum or to major assessment events based on that review.
- h. Sponsor an Annual Curriculum Summit. The UME Executive Committee will determine the agenda, which will focus on topics that would most benefit from input of a wider group of stakeholders. Prior this meeting, the UMEC will distribute a summative program evaluation report to the participating faculty and students and time will be allotted for questions and discussion. Participants in this Summit will include the Dean, department chairs, all elected and ex officio members of UMEC, all phase and longitudinal element teams, members of the Office for Education Design and Informatics, and members of the Program Evaluation and assessment team.

Article 4—Curricular Teams

Section 1—Phase teams: Phase teams will consist of all course, program and block directors and other faculty members who have major teaching roles in that phase, to include representation from each of the longitudinal elements. Each phase team will include representation from the student curriculum committee. There will be teams for the Foundations of Medical Knowledge phase, the Foundations of Clinical Care phase and the Immersion phase. Each phase team will appoint co-chairs who will serve on UMEC and will represent their respective phases at Policy and Curriculum Monitoring Sub-Committee Meetings. Phase teams will meet monthly to carry out the following responsibilities:

- Review course content to ensure horizontal integration with special attention to gaps and redundancies.
- Review assessment approaches and policies to ensure consistency across similar course types (e.g. clerkships in FCC, ISCs in the Immersion Phase)
- Review each course annually, including student performance, student evaluations, and course director reflections, and make recommendations for improvement.
- d. Review and make recommendations to the Policy Sub-Committee regarding policies specific to the phase, such as attendance and excused absence and duty hours.
- e. Prepare regular reports as needed for the Curriculum Montoring Sub-Committee.
- Review relevant annual data from sources such as the Y2Q Questionnaire, the Graduation Questionnaire, and the annual Learning System Survey.
- g. Prepare a report for the Annual Curriculum Summit to include review of the team's activities over the course of the year, a summary of student performance for the entire year (including any adverse actions, probation, remediation of courses, etc.); evidence of successful integration among phase elements; and any other information deemed important by the phase teams. The team will set annual phase goals accordingly.
- Make recommendations for major changes to the Curriculum Monitoring Sub-Committee and UMEC. Major changes requiring higher level approval include:
 - 1. Addition or deletion of courses to the phase, or changes in numbers of required courses such as ISCs in the Immersion Phase.
 - 2. Major changes in course length
 - 3. Changes in major curriculum level requirements, such as changes to the Vandarbilt Care Clinical Curriculum
 - to the Vanderbilt Core Clinical Curriculum.

Section 2. Longitudinal Element Teams: Longitudinal Element teams will consist of the faculty members and students charged with oversight of that element. These teams meet regularly to coordinate experiences and to review program evaluation data. Additionally, each longitudinal team will appoint a representative to each phase team. Each longitudinal team will appoint co- chairs who will serve on the Policy and Curricuum Monitoring Sub-Committees and UMEC. In addition, they will prepare an annual report on the element, to include review of the element's evaluations across levels of training. The team will set annual goals accordingly, and the annual review will be presented at the Annual Curriculum Summit.

Section 3. Assessment and Evaluation Committee: The Assessment and Evaluation Committee is responsible for guiding a programmatic assessment system that directly links assessment to desired learning outcomes and provides consistency throughout the curriculum. The committee will include representation from clinical and foundational science faculty experienced with trainees across all levels of the medical education continuum, and is chaired by the Associate Dean for UME or designee. The Assessment and Evaluation Committee will provide the following functions:

a. Serve as consultants to individual courses to promote alignment with overarching programmatic goals and foster best practices in assessment,

- b. Oversee centralized assessment programs and events,
- c. Monitor outcomes and perform continuous quality improvement, d. Advise UMEC regarding assessment policy.

Article 5: Curriculum Evaluation and Operations

Section 1-Learning System Integration Team: The Learning System Integration (LSI) Team is a trans-phase collaborative group meeting every other month to focus on operational and logistical issues (such as scheduling, faculty demands, space utilization, coordinated communications, IT support, etc.). The LSI Team will refer any programmatic and/or policy issues to UMEC for review and decision-making. Membership will include: leaders of all phase teams and longitudinal elements (FMK, FCC, Immersion; Research, Learning Communities, FHD and VPIL), representation of the assessment and portfolio programs, the SADHSE, the ADUME, the ADMSA, the Assistant Dean for Assessment, the Assistant Dean for UME, the Assistant Deans for Educational Informatics and Technology, the director of clinical skills development, the associate director of the MSTP, the associate director of MIDP, the director of threads, the director of program evaluation, the director of student records, the Chair of UMEC, the Administrative Officer, and the Chairs of the student curriculum committee. This committee will be chaired by the Associate Dean for UME or designee.

Professional Degrees in Hearing and Speech Sciences

DOCTOR OF AUDIOLOGY

Program Overview

The doctor of audiology (Au.D.) is a four-year post-baccalaureate degree which replaced the master of science degree as the requirement for the entry-level practitioner of audiology.

The doctor of philosophy degree continues to be offered to students interested in becoming teacher/investigators.

At present, Vanderbilt's Au.D. program is ranked #1 in the nation by U.S. News and World Report.

Department of Hearing and Speech Sciences Mission

The DHSS is dedicated to serving persons with communicative and related disorders through treatment, education, and research; enhancing our knowledge of communicative and related disorders; shaping the future of communication disorders and related disciplines through national and international leadership; promoting public awareness and prevention of communicative and related disorders; ensuring continuous improvement of operations through personal and professional development; and generating measurable benefits for our community, employees, students, clients and their families, and other customers. As part of this mission, the Au.D. program ensures that students complete all academic course and clinical practica requirements for certification standards in audiology.

Program Accreditation

The doctoral education program in audiology at Vanderbilt University is accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association, 2200 Research Blvd., #310, Rockville, MD 20850, (800) 498-2071 or (301) 296-5700.

Standing Program Committees

Admission Committee

Membership includes all DHSS faculty.

Promotion Committee

Membership includes all DHSS audiology program faculty.

Advisory Committees

Membership includes all DHSS audiology program faculty.

Curriculum Committee

Membership includes all DHSS audiology program faculty.

Program's Major Facilities

Practicum sites include the Vanderbilt University Medical Center, Monroe Carell Jr. Children's Hospital at Vanderbilt, and the Vanderbilt Bill Wilkerson Center for Otolaryngology and Communication Sciences. Additional sites include the Veterans Affairs Medical Center and various other hospitals, outpatient clinics, and private practices in the middle Tennessee area.

Admission

Admission Requirements

The Au.D. program encourages applicants with backgrounds in such areas as communication disorders and other healthrelated professions, biomedical sciences, psychology, and psychoacoustics. All students must possess GRE scores consistent with Vanderbilt standards, a strong record of past academic achievement, a commitment to hearing health care, excellent oral and written communication skills, a willingness to work collaboratively, a strong work ethic, perseverance, and strong organizational and time management skills.

Undergraduate Prerequisites

There are no specific undergraduate prerequisites for the Au.D. However, courses related to the profession and basic sciences are helpful.

All Au,D. students are required to complete a course in normal language development. Those students who do not have an undergraduate course in normal language development are required to take the M.S.-S.L.P course in Child Language Acquisition during the Au.D. program.

Please visit our website at *medschool.vanderbilt.edu/ hearing-speech/* for additional information.

Application Process

Application Deadline: January 15

The application, test scores, and all supporting materials must be received by January 15.

Application Fee

Non-refundable \$50.00 application fee

Statement of Purpose (personal statement)

The Statement of Purpose is a required and important part of the application. The DHSS has no set criteria for the personal statement; it should be no less than one page but no more than 1-1/2 pages (single spaced).

Required Materials

Transcripts/Academic information

Official transcripts, which also should be sent after the completion of your degree, must be sent directly to Vanderbilt according to instructions below. You will be prompted to upload your academic record for each college or university you have attended when you officially submit your application. An academic record can be in the form of a legible scanned copy of a transcript or an academic record from the institution's Student Information System portal. If you are currently enrolled, please submit your academic record after your fall semester grades have been posted, if at all possible.

If you don't have your official transcripts during your application, unofficial transcripts can be provided instead. Official transcripts are required only after an offer of admission is made and accepted. To be considered official, a transcript must be sent directly from your institution to Vanderbilt. Official transcripts should be mailed to Vanderbilt Center for Data Management or delivered through your school's secure electronic transcript service. All other transcripts are considered unofficial. Please do not mail transcripts to the department office.

Letters of Recommendation

Three are required and up to five maximum can be accepted. Letters of recommendation should be from individuals who can speak to the applicant's academic abilities and accomplishments and likelihood of the applicant's success in a clinical or research program. With a maximum of five, supervisors, teaching assistants, etc., are certainly welcome to provide a recommendation for you.

Recommenders are strongly encouraged to submit their letters electronically. The application allows the applicant to identify their recommenders and the system notifies them (on your behalf) by e-mail. When the electronic recommendations are submitted, they are "attached" to the application, and you receive an email message confirming receipt of each recommendation.

Please note: Email addresses should be proofed for accuracy before finalizing the application. If an incorrect email address is entered into the system, the recommender will not receive the request for recommendation.

If you choose not to use the electronic method, it is your responsibility to contact your recommenders and provide them with the DHSS recommendation link found on the departments website at *medschool.vanderbilt.edu/hearing-speech* under Applicant Information. Paper letters of recommendation should be sent to the Center for Data Management and should be received in that office by the application deadline.

Test Scores

Official GRE scores come electronically from the Educational Testing Service (ETS) and are required for all applicants. Official TOEFL scores are required for international applicants only, even if you have completed a 4-year degree in a U.S. institution. The scores should be sent to institution code 1871. The department code is not required in order for your official scores to attach to the application.

Important Note: It is the applicant's responsibility to allow sufficient time for the ETS to score and report test results. Please refer to the ETS website (*http://www.ets.org/gre*) to access the Detailed Score Reporting Schedule for the GRE exam.

Resume/CV or Supplemental Materials

You may upload your resume/cv or other documents the committee may review by accessing the status page of the application and adding the documents in the "upload materials" section.

Tuition Scholarships

Given that most graduate students need financial assistance, need is not a factor; financial awards are offered on the basis of merit, using criteria very similar to those used to judge acceptance into the program. There are no additional forms to complete for scholarships.

Special Requirements for International Applicants

Test of English as a Foreign Language (TOEFL) is required for all international student applicants. Since the Au.D. is a clinical practice degree, it is critical that students have robust written and spoken English skills. Consequently, a TOEFL score of at least 110 is expected for successful applicants.

Financial Resources

In order to meet requirements for entry into the United States, applicants must demonstrate that they have sufficient financial resources to cover the cost of their education. Please be prepared to provide evidence of this funding.

Selection Criteria, Offer, and Acceptance

All students must possess GRE scores consistent with Vanderbilt standards, a strong record of past academic achievement, a commitment to hearing health care, excellent oral and written skills, a willingness to work collaboratively, a strong work ethic, perseverance, and organizational and time management skills.

Admission Decisions

Admission decisions are mailed by March 15.

Response from Students: April 15

If your written response is not received by April 15, the department has the right to rescind the offer of admission and financial award. Confirmed receipt of an email to the director of graduate studies specifying your decision by April 15th can be used to extend our deadline for receipt of the written response.

Transfer Students/Credits

Transfer credit is not accepted for the Au.D. program. Transfer students may apply and, if accepted, generally start at the beginning of the academic year and complete the program's curriculum in its entirety.

Non-degree-seeking Students

Non-degree-seeking students are not allowed to enroll in audiology courses offered by the School of Medicine.

Visiting Students

Visiting students are not allowed to enroll in audiology courses offered by the School of Medicine.

Degree Requirements

Requirements to Earn Degree

All candidates for the Doctor of Audiology must have satisfactorily completed all residency, academic course, and clinical practica requirements of the program.

A minimum of 92 credit hours (including 61 didactic/ course work credit hours and 31 clinical practicum/externship credit hours) is required for the Au.D.

Length and Delivery of Program

The candidate for the Au.D. degree generally spends eleven academic semesters completing the program and is expected to be enrolled in the School of Medicine during each fall, spring, and summer semester until completion of the degree.

The normal time frame for completion of required course work for the doctor of audiology degree is four years. If an individual requires additional time due to unusual circumstances (e.g., remediation, personal leave of absence), the degree program may extend the maximum amount of time to complete the degree to five years.

Curriculum and Tracks

The Vanderbilt DHSS offers a specialty track training for Au.D. students in early identification and management of infants and children with hearing loss. Students enrolled in the specialty track will have additional course work and practicum experience that will prepare them to work with infants and children who are deaf or hard of hearing. This interdisciplinary approach to training-by combining some core courses with speech-language pathology, audiology, and deaf education students while continuing separate courses that are specific to their disciplines—is unique to our Vanderbilt program. The other specialty track training is offered in the area of vestibular sciences. Students who decide to follow this specialty track will, at graduation, possess specialized skills in the assessment of the peripheral and central vestibular system (i.e., vestibulo-ocular, vestibulo-spinal, and vestibulocolic reflexes). Additionally, graduates will understand what rehabilitative options are available to patients with either unilateral or bilateral vestibular system impairments. Course work will include three (3) formal courses in vestibular sciences. Specialty track students will have priority for practicum experiences in the Balance Disorders Clinic that assesses ~1400 patients/year. It is our intention for specialty track students to be offered the opportunity to have a concentrated clinical Maymester experience at a clinical site separate from Vanderbilt University. Finally, it will be expected that the capstone project conducted by the specialty track student will be in a vestibular system/balance topic area.

Externship

Au.D. students must complete a fourth-year clinical externship which begins during the summer of the third year and must continue for a minimum of ten months.

Dissertation/Capstone

All Au.D. students must complete a capstone project. The doctoral capstone project comprises 6 credit hours taken in years 2 and 3.

Course List

A full list of program courses is provided in this catalog under "Courses of Study."

Tuition, Fees, and Financial Aid

The following university costs are included with tuition:

- professional liability insurance
- student health service
- verifications

Academic Year 2019/2020 Tuition

Tuition, 1st, 2nd, 3rd years	\$40,800
Tuition, 4th year	8,076
Special, Non-Degree Seeking (per credit hour)	1,598

The total estimated cost of attendance for a first-, second-, or third-year student is \$76,079. The estimated cost of attendance for a fourth-year student is \$34,790. (See *medschool.vanderbilt.edu/financial-services/*

doctor-of-audiology-cost-of-attendance.)

Payment of Tuition and Fees

Please refer to the School of Medicine Tuition, Fees, and Financial Aid section of this catalog for more information about university costs and School of Medicine fees. Additional information can be found at *finance.vanderbilt.edu/stuaccts*.

Student Assessment

Grades

The Department of Hearing and Speech Sciences follows School of Medicine policy for grades. See the Academic Policies for All School of Medicine Programs chapter of this catalog.

Clinical Assessment

All Au.D. students are expected to make good progress in developing clinical skills by participating in clinical practicum throughout their time in the program. The first semester of clinical practicum involves more observation and guidance than actual hands-on experience. Students are graded in the first semester of practicum, primarily based on attendance, punctuality, professionalism, and active engagement in the learning process. In subsequent semesters, clinical supervisors assess clinical performance/learning for competency areas specific to the clinical setting. Grades for practicum assignments and case conference may be reduced for unexcused absences from either clinic or clinical case conference according to prevailing departmental guidelines.

Periodic Reviews

Student performance is reviewed annually, and a failure to appropriately develop clinical skills can result in probationary status which must be alleviated in order to continue in the program.

Satisfactory Academic Progress and Good Standing

All students who maintain at least a 3.0 GPA and have earned at least a B- in all course work and clinical practica are classified as in good standing through their demonstration of satisfactory academic progress.

Graduation

The Department of Hearing and Speech Sciences follows School of Medicine policy for general degree requirements. See the Academic Policies for All School of Medicine Programs chapter of this catalog.

Program Commencement

Degree candidates must have completed successfully all curriculum, academic, clinical, and residency requirements (applicable to the degree sought) to be allowed to participate in the ceremony. A student completing degree requirements in the summer or fall semester is invited to participate in Commencement the following May. However, the semester in which the degree was actually earned is the one recorded on the diploma and the student's permanent record.

Formal Remediation and Probation

Formal Remediation Plan

Students who receive a grade of C+ or poorer in academic courses and/or clinical courses/practica, whether required or elective, may be required to remedy the grade as specified in a formal remediation plan. If the course in question is prerequisite for another course, the student is required to remedy the grade before being permitted to proceed. Possible remedies include re-examination, course/practica repetition, and/ or prerequisite examination prior to entering a higher-level course. Credit may be given on the basis of re-examination or satisfactory repetition of the course/practica work, but the original grade remains on the record and may be counted in the computations as cause for dismissal if additional poor performance occurs.

Probation

Failure to appropriately develop clinical skills, failure to earn at least a B- in a single course, or failure to maintain a GPA equal to or above a 3.0 results in probationary status which must be alleviated in order to continue in the program. The faculty committee recommends removal of probationary status when a student has demonstrated a continuing record of satisfactory performance in succeeding units of academic study/clinical practica and maintains a GPA of at least 3.0.

Dismissal

Students placed on academic and/or clinical probation who do not perform in a satisfactory manner during the subsequent academic year, including meeting the formal goals specified in their remediation plan, are considered for dismissal from school unless there are mitigating circumstances approved by the appropriate faculty committee, VCGS, and chair, DHSS. Students on probation may be considered for dismissal from school if their academic and/or clinical performance continues at a marginal level, even though there may be no recorded failures.

The Department of Hearing and Speech Sciences follows School of Medicine policy for formal remediation, probation, dismissal, and appeals. See the Academic Policies for All School of Medicine Programs chapter of this catalog for more information on these topics.

Eligibility to Reapply

Students who are dismissed from the program are not eligible to reapply.

Student Support and Advisory Services

Academic Advisory Resources

The program director has an open door policy for all students in the Au.D. program.

Health and Wellness

See Vanderbilt University Student Resources in the Life at Vanderbilt chapter of this catalog.

Other Program Policies

Program Evaluation

The DHSS chair has regular, town hall type meetings with staff, students, and faculty and the outcomes of these meetings, in combination with curriculum review committee meetings, employer surveys, alumni surveys, and supervisor evaluations, are used to identify areas of potential program improvement. These areas are then discussed in regular meetings (typically monthly) of the full DHSS faculty and considered during annual revisions of department pillar goals.

Leave of Absence

Graduate programs in the DHSS require continuous registration for fall, spring, and summer semesters. Students who want to interrupt their graduate study must apply to the School of Medicine (Au.D., M.D.E., and M.S.) and receive an authorized leave of absence. Any student who feels a medical or family leave of absence may be required should first contact either the vice chair for graduate studies or the Vanderbilt Student Access Services office (*vanderbilt.edu/student-access/*) to initiate the procedure. For non-medical or family leave request, the student should contact the vice chair for graduate studies. Leave of absence is granted for a maximum of one year. Those without authorized leave who do not register are dropped from the rolls of the School of Medicine and are not considered students. If they want to resume graduate study at Vanderbilt, they must apply for reinstatement. Reinstatement and degree completion timelines are also governed by policies of the medical school as appropriate.

Attendance and Leave

Class

Students are expected to attend classes regularly. Each student is primarily responsible to the instructor in matters pertaining to class attendance. Attendance regulations are based on the assumption that academic and clinical success is the student's primary goal when pursuing a graduate degree. The weight given to class attendance in determining your course grades are an academic matter; therefore, instructors are responsible for allowing make-up work in the case of unexcused absences. If a grade penalty exists, it should be noted in the course syllabus.

Clinic

Student attendance is required at every clinical session throughout the duration of each practicum assignment unless otherwise scheduled by the supervisor. Only those absences due to illness or similar unanticipated emergencies may be excused; these should be reported immediately, directly to the supervisor. For additional information, see your clinic handbook.

Any absences from class or clinic due to illness, death of an immediate family member, or similar unanticipated emergencies that affect more than one class or clinic period should be reported to the vice chair of graduate studies as soon as possible. The VCGS will work with the student and affected parties to ensure that adequate and reasonable accommodations are provided for without penalty to the student. In the case of medical issues including mental health difficulties with long-term implications, the student is encouraged to contact the Vanderbilt University Student Access Services office directly to arrange accommodations.

Student Work Policy

Students are typically allowed to work 10 hours per week outside of their scheduled classes while school is in session. All student workers need to request the approval of the vice chair of graduate studies.

Transportation

Students may be placed for educational experiences in clinical sites located away from the Vanderbilt University campus. Students should be prepared to drive up to 60 miles from the Vanderbilt University campus to reach off-site placements. Students are responsible for their own transportation to and from all clinical sites for educational experiences, including all costs associated with that travel.

Honors and Awards

- Jay W. Sanders Award. For outstanding clinical and academic achievements in audiology
- OHDE-Grantham Award for Excellence in Student Research. For students who exemplify excellence in research in any of the departmental disciplines

Laura Knox Humanitarian Award. For students who possess and exemplify compassion for others through service leadership

MASTER OF EDUCATION OF THE DEAF

Program Overview

The Department of Hearing and Speech Sciences offers a Master of Education of the Deaf program. This one- to two-year program emphasizes skills related to effectively planning and implementing specialized instruction for children and youth with hearing loss.

The DHSS is home to a unique, interdisciplinary approach to teacher training by combining training in audiology, speech-language pathology, and deaf education. Please visit our website at *medschool.vanderbilt.edu/hearing-speech* for additional information.

Program Accreditation

Council for the Accreditation of Educator Preparation (CAEP)

CAEP 1140 19th Street NW, Suite 400 Washington DC, 20036 (202) 223-0077 *caepnet.org*

Standing Program Committees

Admission Committee

Membership includes all DHSS faculty.

Promotion Committee

Membership includes all M.D.E. faculty.

Advisory Committees

Membership includes all M.D.E. faculty.

Curriculum Committee

Membership includes all M.D.E. faculty.

Program's Major Facilities

The Mama Lere Hearing School in our National Center for Childhood Deafness and Family Communication serves as one of the practicum placements for the DHSS deaf education program. This early childhood school for children who are deaf or hard of hearing is known for its outstanding work in the areas of speech development, auditory training, cochlear implant habilitation, language, and reading. In addition, M.D.E. students complete practicum hours in urban and rural settings in the greater Nashville area.

Admission

We encourage all interested students to apply for our graduate program. The program will be one year in length (three semesters: fall, spring, and summer including Maymester) for those entering with teacher certification in deaf education and two years (five semesters: fall, spring and summer including Maymester in year 1, fall and spring in year 2) for those entering with teacher certification in an area other than deaf education. The two-year program leads to an endorsement in special education preK-12 hearing

Admission Requirements

Students entering the Master of Education of the Deaf program are required to have an undergraduate degree in deaf education, special education, early childhood education, or general education and must have teacher certification.

Application Process

Application Deadline: January 15

The application, test scores, and all supporting materials must be received by January 15.

Application Fee

Non-refundable \$50.00 application fee

Statement of Purpose (personal statement)

The Statement of Purpose is a required and important part of the application. The DHSS has no set criteria for the personal statement; it should be no less than one page but no more than 1-1/2 pages (single spaced).

Required Materials

Transcripts/Academic information

Official transcripts, which also should be sent after the completion of your degree, must be sent directly to Vanderbilt according to instructions below. You will be prompted to upload your academic record for each college or university you have attended when you officially submit your application. An academic record can be in the form of a legible scanned copy of a transcript or an academic record from the institution's Student Information System portal. If you are currently enrolled, please submit your academic record after your fall semester grades have been posted, if at all possible.

If you don't have your official transcripts during your application, unofficial transcripts can be provided instead. Official transcripts are required only after an offer of admission is made and accepted. To be considered official, a transcript must be sent directly from your institution to Vanderbilt. Official transcripts should be mailed to the Vanderbilt Center for Data Management or delivered through your school's secure electronic transcript service. All other transcripts are considered unofficial. Please do not mail transcripts to the department office.

Letters of Recommendation

Three are required and up to five maximum can be accepted. Letters of recommendation should be from individuals who can speak to the applicant's academic abilities and accomplishments and likelihood of the applicant's success in a clinical or research program. With a maximum of five, supervisors, teaching assistants, etc., are certainly welcome to provide a recommendation for you. Recommenders are strongly encouraged to submit their letters electronically. The application allows the applicant to identify their recommenders and the system notifies them (on your behalf) by e-mail. When the electronic recommendations are submitted, they are "attached" to the application, and you receive an email message confirming receipt of each recommendation.

Please note: Email addresses should be proofed for accuracy before finalizing the application. If an incorrect email address is entered into the system, the recommender will not receive the request for recommendation.

If you choose not to use the electronic method, it is your responsibility to contact your recommenders and provide them with the DHSS recommendation link found on the departments website at *medschool.vanderbilt.edu/hearing-speech* under Applicant Information. Paper letters of recommendation should be sent to the Center for Data Management and should be received in that office by the application deadline.

Test Scores

Official GRE scores come electronically from the Educational Testing Service (ETS) and are required for all applicants. Official TOEFL scores are required for international applicants only, even if you have completed a 4-year degree in a U.S. institution. The scores should be sent to institution code 1871. The department code is not required in order for your official scores to attach to the application.

Important Note: It is the applicant's responsibility to allow sufficient time for the ETS to score and report test results. Please refer to the ETS website (*http://www.ets.org/gre*) to access the Detailed Score Reporting Schedule for the GRE exam.

Resume/CV or Supplemental Materials

You may upload your resume/cv or other documents the committee may review by accessing the status page of the application and adding the documents in the "upload materials" section.

Tuition Scholarships

Given that most graduate students need financial assistance, need is not a factor; financial awards are offered on the basis of merit, using criteria very similar to those used to judge acceptance into the program. There are no additional forms to complete for scholarships.

Special Requirements for International Applicants

Test of English as a Foreign Language is required of all international student applicants.

Financial Resources

In order to meet requirements for entry into the United States, applicants must demonstrate that they have sufficient financial resources to cover the cost of their education. Please be prepared to provide evidence of this funding.

Selection Criteria, Offer, and Acceptance

All students must possess GRE scores consistent with Vanderbilt standards, a strong record of past academic achievement, a commitment to hearing health care, excellent oral and written skills, a willingness to work collaboratively, a strong work ethic, perseverance, and organizational and time management skills.

Admission Decisions

Admission decisions are mailed by March 15.

Response from Students: April 15

If your written response is not received by April 15, the department has the right to rescind the offer of admission and financial award. Confirmed receipt of an email to the director of graduate studies specifying your decision by April 15th can be used to extend our deadline for receipt of the written response.

Transfer Students/Credits

Transfer credit is not accepted for the M.D.E. program. Transfer students may apply and, if accepted, generally start at the beginning of and complete the program's curriculum in its entirety.

Non-degree-seeking Students

Non-degree-seeking students are not allowed to enroll in M.D.E. courses offered by the School of Medicine.

Visiting Students

Visiting students are not allowed to enroll in M.D.E. courses offered by the School of Medicine.

Degree Requirements

Requirements to Earn Degree

All candidates for the Master of Education of the Deaf must have satisfactorily completed all residency, academic course, and clinical practica requirements of the program.

Length and Delivery of Program

The candidate for the M.D.E. program spends at least three academic semesters of graduate study at Vanderbilt. Candidates for the M.D.E. degree are expected to be enrolled in the School of Medicine during each fall, spring, or summer semester until completion of the degree.

The normal time frame for completion of required course work for the master of education of the deaf degree is one to two years, depending on student's academic background upon entering the program. If an individual requires additional time due to unusual circumstances (e.g., remediation, personal leave of absence), the degree program may extend the maximum amount of time to complete the degree to three years.

Curriculum and Tracks

For M.D.E. students on the one-year track, a minimum of 37 semester hours (which includes 29 hours of formal, didactic course work and 8 practicum hours) is required. Students on the two-year track must complete a minimum of 64 semester hours (which includes 50 hours of formal, didactic course work and 14 practicum hours) for the M.D.E. and endorsement in special education hearing in pre K-12. For two-year students not seeking endorsement, a minimum of 58 semester hours (which includes 44 hours of formal, didactic course work and 14 practicum hours) is required.

Internship/Externship

Maymester internship/externship, designed to provide students with a unique opportunity for a three-week intensive practicum working with deaf and hard-of-hearing children, is required for graduation.

Other Degree Requirements

Students must also complete a service obligation experience which provides them with the opportunity to gain an enhanced understanding of children with hearing loss and their families. Service obligations require a minimum of 100 hours during the first year of enrollment. At least half of the hours should involve direct child contact.

Course List

A full list of program courses is provided in this catalog under "Courses of Study."

Tuition, Fees, and Financial Aid

The following university costs are included with tuition:

- professional liability insurance
- student health service
- verifications

Academic Year 2019/2020 Tuition

Tuition, 1st year (12 months)	\$40,800
Tuition, 2nd year (9 months)	27,200
Special, Non-Degree Seeking (per credit hour)	1,598

The total estimated cost of attendance for a first-year student is \$76,079. The estimated cost of attendance for a second-year student as \$53,914.

(See medschool.vanderbilt.edu/financial-services/ master-of-education-of-the-deaf-cost-of-attendance.)

Payment of Tuition and Fees

Please refer to the School of Medicine Tuition, Fees, and Financial Aid section of this catalog for more information about university costs and School of Medicine fees. Additional information can be found at *finance.vanderbilt.edu/stuaccts*.

Student Assessment

Grades

The Department of Hearing and Speech Sciences follows School of Medicine policy for grades. See the Academic Policies for All School of Medicine Programs chapter of this catalog.

Progress and Promotion

Periodic Reviews

Student performance is reviewed annually.

Satisfactory Academic Progress and Good Standing

All students who maintain at least a 3.0 GPA and have earned at least a B- in all course work are classified as in good standing through their demonstration of satisfactory academic progress.

Graduation

The Department of Hearing and Speech Sciences follows School of Medicine policy for general degree requirements. See the Academic Policies for All School of Medicine Programs chapter of this catalog.

Formal Remediation and Probation

Formal Remediation Plan

Students who receive a grade of C+ or poorer in academic courses and/or clinical courses/practica, whether required or elective, may be required to remedy the grade as specified in a formal remediation plan. If the course in question is prerequisite for another course, the student is required to remedy the grade before being permitted to proceed. Possible remedies include re-examination, course/practica repetition, and/ or prerequisite examination prior to entering a higher level course. Credit may be given on the basis of re-examination or satisfactory repetition of the course work, but the original grade remains on the record and may be counted in the computations as cause for dismissal, if additional poor performance occurs.

Probation

Failure to appropriately develop teaching skills, failure to earn at least a B- in a single course, or failure to maintain a GPA equal to or above a 3.0 results in probationary status which must be alleviated in order to continue in the program.

Dismissal

Students placed on academic and/or clinical probation who do not perform in a satisfactory manner during the subsequent academic year, including meeting the formal goals specified in their remediation plan, are considered for dismissal from school unless there are mitigating circumstances approved by the appropriate faculty committee, VCGS, and chair, DHSS. Students on probation may be considered for dismissal from school if their academic and/or clinical performance continues at a marginal level, even though there may be no recorded failures.

The Department of Hearing and Speech Sciences follows School of Medicine policy for formal remediation, probation, dismissal, and appeals. See the Academic Policies for All School of Medicine Programs chapter of this catalog for more information on these topics.

Eligibility to Reapply

Students who are dismissed from the program are not eligible to reapply.

Student Support and Advisory Services

Academic Advisory Resources

The program director has an open door policy for all students in the M.D.E program.

Health and Wellness

See Vanderbilt University Student Resources in the Life at Vanderbilt chapter of this catalog.

Other Program Policies



The DHSS chair has regular, town hall type meetings with staff, students, and faculty and the outcomes of these meetings, in combination with curriculum review committee meetings, employer surveys, alumni surveys, and supervisor evaluations, are used to identify areas of potential program improvement. These areas are then discussed in regular meetings (typically monthly) of the full DHSS faculty and considered during annual revisions of department pillar goals.

Leave of Absence

Graduate programs in the DHSS require continuous registration for fall, spring, and summer semesters. Students who want to interrupt their graduate study must apply to the School of Medicine (Au.D., M.D.E., and M.S.) and receive an authorized leave of absence. Any student who feels a medical or family leave of absence may be required should first contact either the vice chair for graduate studies or the Vanderbilt Student Access Services office (vanderbilt.edu/student-access/) to initiate the procedure. For non-medical or family leave request, the student should contact the vice chair for graduate studies. Leave of absence is granted for a maximum of one year. Those without authorized leave who do not register are dropped from the rolls of the School of Medicine and are not considered students. If they want to resume graduate study at Vanderbilt, they must apply for reinstatement. Reinstatement and degree completion time lines are also governed by policies of the medical school as appropriate.

Attendance and Leave

Class

Students are expected to attend classes regularly. Each student is primarily responsible to the instructor in matters pertaining to class attendance. Attendance regulations are based on the assumption that academic and clinical success is the student's primary goal when pursuing a graduate degree. The weight given to class attendance in determining your course grades are an academic matter; therefore, instructors are responsible for allowing make-up work in the case of unexcused absences. If a grade penalty exists, it should be noted in the course syllabus.

Clinic

Student attendance is required at every clinical session throughout the duration of each practicum assignment unless otherwise scheduled by the supervisor. Only those absences due to illness or similar unanticipated emergencies may be excused; these should be reported immediately directly to the supervisor. For additional information, see your clinic handbook.

Any absences from class or clinic due to illness, death of an immediate family member, or similar unanticipated emergencies that affect more than one class or clinic period should be reported to the Vice Chair of Graduate Studies as soon as possible. The VCGS will work with the student and affected parties to ensure that adequate and reasonable accommodations are provided for without penalty to the student. In the case of medical issues including mental health difficulties with long-term implications, the student is encouraged to contact the Vanderbilt Student Access Services office directly to arrange accommodations.

Student Work Policy

All student workers must request approval from the M.D.E. program director.

Transportation

Students may be placed for educational experiences in sites located away from the Vanderbilt University campus. Students should be prepared to drive up to 60 miles from the Vanderbilt University campus to reach off-site placements. Students are responsible for their own transportation to and from all sites for educational experiences, including all costs associated with that travel.

Honors and Awards

OHDE-Grantham Award for Excellence in Student Research. For students who exemplify excellence in research in any of the departmental disciplines

Laura Knox Humanitarian Award. For students who possess and exemplify compassion for others through service leadership

MASTER OF SCIENCE (SPEECH-LANGUAGE PATHOLOGY)

Program Overview

The master's program in speech-language pathology is administered through the Vanderbilt University School of Medicine. The program provides clinical education leading to professional certification in speech-language pathology. The five- or six-semester program (depending on background) spans up to two calendar years of full-time study.

Students without a background in communication disorders require an extra semester. Many clinical opportunities are available throughout the program. The program culminates in a ten-week clinical externship. The program meets or exceeds American Speech-Language-Hearing Association requirements.

Cochlear implant, autism, and education courses are a part of the curriculum for students with interests in those areas. There is also a thesis option. At present, Vanderbilt's M.S.-S.L.P. program is ranked #1 in the nation by U.S. News and World Report.

Program Mission/Goals/Objectives

The mission of the M.S.-S.L.P. is to present students with an evidence-based education leading to appropriate and effective clinical service in the context of a department engaged in and allowing exposure to cutting-edge research.

Program Accreditation

The master's (M.S.) degree program in speech-language pathology at Vanderbilt University is accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association, 2200 Research Blvd., #310, Rockville, MD 20850, (800) 498-2071 or (301) 296-5700.

Standing Program Committees

Admission Committee

Membership includes all DHSS faculty

Promotion Committee

Membership includes all M.S.-S.L.P. faculty.

Advisory Committees

Membership includes all M.S.-S.L.P. faculty.

Curriculum Committee

Membership includes all M.S.-S.L.P. faculty.

Program's Major Facilities

Practicum sites include the Vanderbilt University Medical Center, Monroe Carell Jr. Children's Hospital at Vanderbilt, and the Vanderbilt Bill Wilkerson Center for Otolaryngology and Communication Sciences. Additional sites include the Veterans Affairs Medical Center, hospitals, outpatient clinics, and private practices in the Middle Tennessee area.

Admission

Admission Requirements

Students with backgrounds in such areas as communication disorders and other health-related professions, biomedical sciences, psychology, and linguistics are encouraged to apply.

It is necessary for all M.S.-S.L.P. applicants to have satisfied the following prerequisites prior to matriculation in the Vanderbilt program.

- 1. Biological Sciences (at least one course, for example, Intro to Biology)
- 2. Physics or Chemistry (course work does not have to be at a level for science majors, but it does need to carry full college credit and be applicable to a general science requirement).
- 3. Statistics

4. Social/Behavioral Sciences (at least one course in psychology, political science, economics, or anthropology)

Although other courses, for example, Fundamentals of Hearing Science, are useful, the above four areas of study are required by the Council on Clinical Certification of the American Speech-Language-Hearing Association for credentialing purposes as prerequisite for initiating graduate study in accredited SLP programs.

Please visit our website at *medschool.vanderbilt.edu/ hearing-speech/* for additional information.

Application Process

Application Deadline: January 15

The application, test scores, and all supporting materials must be received by January 15.

Application Fee

Non-refundable \$50.00 application fee

Statement of Purpose (personal statement)

The Statement of Purpose is a required and important part of the application. The DHSS has no set criteria for the personal statement; it should be no less than one page but no more than 1-1/2 pages (single spaced).

Required Materials

Transcripts/Academic information

Official transcripts, which also should be sent after the completion of your degree, must be sent directly to Vanderbilt according to instructions below. You will be prompted to upload your academic record for each college or university you have attended when you officially submit your application. An academic record can be in the form of a legible scanned copy of a transcript or an academic record from the institution's Student Information System portal. If you are currently enrolled, please submit your academic record after your fall semester grades have been posted, if at all possible.

If you don't have your official transcripts during your application, unofficial transcripts can be provided instead. Official transcripts are required only after an offer of admission is made and accepted. To be considered official, a transcript must be sent directly from your institution to Vanderbilt. Official transcripts should be mailed to Vanderbilt Center for Data Management or delivered through your school's secure electronic transcript service. All other transcripts are considered unofficial. Please do not mail transcripts to the department office.

Letters of Recommendation

Three are required and up to five maximum can be accepted. Letters of recommendation should be from individuals who can speak to the applicant's academic abilities and accomplishments and likelihood of the applicant's success in a clinical or research program. With a maximum of five, supervisors, teaching assistants, etc., are certainly welcome to provide a recommendation for you.

Recommenders are strongly encouraged to submit their letters electronically. The application allows the applicant to identify their recommenders and the system notifies them (on your behalf) by e-mail. When the electronic recommendations are submitted, they are "attached" to the application, and you receive an email message confirming receipt of each recommendation.

Please note: Email addresses should be proofed for accuracy before finalizing the application. If an incorrect email address is entered into the system, the recommender will not receive the request for recommendation.

If you choose not to use the electronic method, it is your responsibility to contact your recommenders and provide them with the DHSS recommendation link found on the departments website at *medschool.vanderbilt.edu/hearing-speech* under Applicant Information. Paper letters of recommendation should be sent to the Center for Data Management and should be received in that office by the application deadline.

Test Scores

Official GRE scores come electronically from the Educational Testing Service (ETS) and are required for all applicants. Official TOEFL scores are required for international applicants only, even if you have completed a 4-year degree in a U.S. institution. The scores should be sent to institution code 1871. The department code is not required in order for your official scores to attach to the application.

Important Note: It is the applicant's responsibility to allow sufficient time for the ETS to score and report test results. Please refer to the ETS website (*http://www.ets.org/gre*) to access the Detailed Score Reporting Schedule for the GRE exam.

Resume/CV or Supplemental Materials

You may upload your resume/cv or other documents the committee may review by accessing the status page of the application and adding the documents in the "upload materials" section.

Tuition Scholarships

Given that most graduate students need financial assistance, need is not a factor; financial awards are offered on the basis of merit, using criteria very similar to that used to judge acceptance into the program. There are no additional forms to complete for scholarships.

Special Requirements for International Applicants

Test of English as a Foreign Language (TOEFL) is required for all international student applicants.

Financial Resources

In order to meet requirements for entry into the United States, applicants must demonstrate that they have sufficient financial resources to cover the cost of their education. Please be prepared to provide evidence of this funding.

Selection Criteria, Offer, and Acceptance

All students must possess GRE scores consistent with Vanderbilt's standards, a strong record of past academic achievement, a commitment to perseverance, and exceptional organizational and time-management skills.

Admission Decisions

Admission decisions are mailed by March 15.

Response from Students: April 15

If your written response is not received by April 15, the Department has the right to rescind the offer of admission and financial award. Confirmed receipt of an email to the director of graduate studies specifying your decision by April 15th can be used to extend our deadline for receipt of the written response.

Transfer Students/Credits

Transfer credit is not accepted for the M.S.-S.L.P. program. Transfer students may apply and, if accepted, generally start at the beginning of and complete the program's curriculum in its entirety.

Non-degree-seeking Students

Non-degree-seeking students are not allowed to enroll in S.L.P. courses offered by the School of Medicine.

Visiting Students

Visiting students are not allowed to enroll in S.L.P. courses offered by the School of Medicine.

Degree Requirements

Requirements to Earn Degree

All candidates for the Master of Science (Speech-Language Pathology) must have satisfactorily completed all residency, academic course, and clinical practica requirements of the program.

For M.S.-S.L.P. students with an undergraduate background in communication sciences and disorders, a minimum of 47 semester hours (including 37 didactic credit hours and 10 clinical practicum credit hours) is required for the master's degree.

For M.S.-S.L.P. students without an undergraduate background in communication sciences and disorders, a minimum of 54 semester credit hours (including 43 didactic credit hours and 11 clinical practicum credit hours) is required. Curriculum requirements, course content, and the number and distribution of credit hours are determined by the M.S.-S.L.P. program faculty.

Length and Delivery of Program

The candidate for the M.S.-S.L.P. spends at least five academic semesters of graduate study at Vanderbilt. Candidates for the M.S.-S.L.P. are expected to be enrolled in the School of Medicine during each fall, spring, and summer semester until completion of their degree requirements.

The normal time frame for completion of required course work for the master of science in speech-language pathology is two years. If an individual requires additional time due to unusual circumstances (e.g., remediation, personal leave of absence), the degree program may extend the maximum amount of time to complete the degree to three years.

Curriculum and Tracks

Enrollment in clinical practicum is required during each semester of the student's enrollment. Students must have 25 clock hours of clinical observation of clinical service provision conducted by or supervised by a person with the Certificate of Clinical Competence (CCC) in speech-language pathology from the American Speech-Language-Hearing Association. If this observation has not been met prior to enrollment in the M.S.–S.L.P. program, the student completes the observation during the first semester before having an opportunity for direct patient contact.

Internships/Externship

During the final semester of enrollment, the student completes a 10-week full-time externship. Students are expected to have completed a minimum of 400 clinical clock hours prior to initiation of the externship.

Course List

A full list of program courses is provided in this catalog under "Courses of Study."

Tuition, Fees, and Financial Aid

The following university costs are included with tuition: • professional liability insurance

- student health service
- verifications

Academic Year 2019/2020 Tuition

Tuition, 1st year	\$40,800
Tuition, 2nd year (6 semester students)	40,800
Tuition, 2nd year (5 semester students)	27,200
Special, Non-Degree Seeking (per credit hour)	1,598

The total estimated cost of attendance for a first-year student is \$76,079. The estimated cost of attendance for a second-year student attending all 3 semesters (6 semester student) is \$76,079, and attending 2 semesters (5 semester student) is \$53,914.

(See medschool.vanderbilt.edu/financial-services/ master-of-science-speech-language-pathology-cost-of-attendance.)

Payment of Tuition and Fees

Please refer to the School of Medicine Tuition, Fees and Financial Aid section of this catalog for more information about university costs and School of Medicine fees. Additional information can be found at *finance.vanderbilt.edu/stuaccts*.

Student Assessment

Grades

The Department of Hearing and Speech Sciences follows School of Medicine policy for grades. See the Academic Policies for All School of Medicine Programs chapter of this catalog.

Clinical Assessment

All M.S.-S.L.P. students are expected to make good progress in developing clinical skills by participating in clinical practicum

throughout their time in the program. The first semester of clinical practicum involves more observation and guidance than actual hands-on experience. Grading in the first semester is primarily based on attendance, punctuality, professionalism, and active engagement in the learning process during clinic assignments. In subsequent semesters, clinical supervisors assess clinical performance/learning for competency areas specific to the clinical setting, Grades for practicum assignments may be reduced for unexcused absences from clinic according to prevailing departmental guidelines.

Competency Assessment

Each student prepares a formal case report on a client or clinical procedure during the final year of the two-year program, with guidance from a clinical faculty member or clinical supervisor, for presentation to faculty, staff, and student peers. The quality of the case presentation is assessed formally by faculty and staff members regarding a number of elements of content.

Progress and Promotion

Periodic Reviews

Student's progress is reviewed annually.

Satisfactory Academic Progress and Good Standing

All students who maintain at least a 3.0 GPA and have earned at least a B- in all course work and clinical practica are classified as in good standing through their demonstration of satisfactory academic progress.

Graduation

The Department of Hearing and Speech Sciences follows School of Medicine policy for general degree requirements. See the Academic Policies for All School of Medicine Programs chapter of this catalog.

Formal Remediation and Probation

Formal Remediation Plan

Students who receive a grade of C+ or poorer in academic courses and/or clinical courses/practica, whether required or elective, may be required to remedy the grade as specified in a formal remediation plan. If the course in question is prerequisite for another course, the student is required to remedy the grade before being permitted to proceed. Possible remedies include re-examination, course/practica repetition, and/or prerequisite examination prior to entering a higher level course. Credit may be given on the basis of re-examination or satisfactory repetition of the course/practica work, but the original grade remains on the record and may be counted in the computations as cause for dismissal if additional poor performance occurs.

Probation

Failure to appropriately develop clinical skills, failure to earn at least a B- in a single course, or a failure to maintain a GPA

equal to or above a 3.0 results in probationary status which must be alleviated in order to continue in the program.

Dismissal

Students placed on academic and/or clinical probation who do not perform in a satisfactory manner during the subsequent academic year including meeting the formal goals specified in their remediation plan considered for dismissal from school unless there are mitigating circumstances approved by the appropriate faculty committee, VCGS, and chair, DHSS. Students on probation may be considered for dismissal from school if their academic and/or clinical performance continues at a marginal level, even though there may be no recorded failures.

The Department of Hearing and Speech Sciences follows School of Medicine policy for formal remediation, probation, dismissal, and appeals. See the Academic Policies for All School of Medicine Programs chapter of this catalog for more information on these topics.

Eligibility to Reapply

Students who are dismissed from the program are not eligible to reapply.

Student Support and Advisory Services

Academic Advisory Resources

The program director has an open door policy for all students in the M.S.-S.L.P. program.

Health and Wellness

See Vanderbilt University Student Resources in the Life at Vanderbilt chapter of this catalog.

Other Program Policies

Program Evaluation

The DHSS chair has regular, town hall type meetings with staff, students, and faculty and the outcomes of these meetings, in combination with curriculum review committee meetings, employer surveys, alumni surveys, and supervisor evaluations, are used to identify areas of potential program improvement. These areas are then discussed in regular meetings (typically monthly) of the full DHSS faculty and considered during annual revisions of department pillar goals.

Leave of Absence

Graduate programs in the DHSS require continuous registration for fall, spring, and summer semesters. Students who want to interrupt their graduate study must apply to the School of Medicine (Au.D., M.D.E., and M.S.) and receive an authorized leave of absence. Any student who feels a medical or family leave of absence may be required should first contact either the vice chair for graduate studies or the Vanderbilt Student Access Services office (vanderbilt.edu/student-access/) to initiate the procedure. For non-medical or family leave request, the student should contact the vice chair for graduate studies. Leave of absence is granted for a maximum of one year. Those without authorized leave who do not register are dropped from the rolls of the School of Medicine and are not considered students. If they want to resume graduate study at Vanderbilt, they must apply for reinstatement. Reinstatement and degree completion time lines are also governed by policies of the medical school as appropriate.

Attendance and Leave

Class

Students are expected to attend classes regularly. Each student is primarily responsible to the instructor in matters pertaining to class attendance. Attendance regulations are based on the assumption that academic and clinical success is the student's primary goal when pursuing a graduate degree. The weight given to class attendance in determining your course grades are an academic matter; therefore, instructors are responsible for allowing make-up work in the case of unexcused absences. If a grade penalty exists, it should be noted in the course syllabus.

Clinic

Student attendance is required at every clinical session throughout the duration of each practicum assignment unless otherwise scheduled by the supervisor. Only those absences due to illness or similar unanticipated emergencies may be excused; these should be reported immediately directly to the supervisor. For additional information, see your clinic handbook.

Any absences from class or clinic due to illness, death of an immediate family member, or similar unanticipated emergencies that affect more than one class or clinic period should be reported to the vice chair of graduate studies as soon as possible. The VCGS will work with the student and affected parties to ensure that adequate and reasonable accommodations are provided for without penalty to the student. In the case of medical issues including mental health difficulties with long-term implications, the student is encouraged to contact the Vanderbilt Student Access Services office directly to arrange accommodations.

Student Work Policy

Students are typically allowed to work ten hours per week outside of their scheduled classes while school is in session. All student workers need to request the approval of the vice chair of graduate studies.

Transportation

Students are placed for educational experiences in clinical sites located away from the Vanderbilt University campus. Students should be prepared to drive up to 60 miles from the Vanderbilt University campus to reach off-site placements. Students are responsible for their own transportation to and from all clinical sites for educational experiences, including all costs associated with that travel.

Honors and Awards

- **Russell J. Love Award.** For outstanding clinical and academic achievements in speech-language pathology
- OHDE-Grantham Award for Excellence in Student Research. For students who exemplify excellence in research in any of the departmental disciplines
- Laura Knox Humanitarian Award. For students who possess and exemplify compassion for others through service leadership

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Professional Programs in Medical Physics

PROFESSIONAL DOCTORATE IN MEDICAL PHYSICS

Program Overview

Medical physics is an applied branch of physics devoted to the application of concepts and methods from physics to the diagnosis and treatment of human disease.

Medical physicists are scientists concerned with three primary areas of activity: clinical service and consultation, research and development, and teaching. Clinically, medical physicists are called upon to contribute scientific advice and resources to solve physical problems arising in radiological medical physics. Medical physics research typically involves the discovery and development of new instrumentation and technology, new medical diagnostic and therapeutic procedures, and tests using existing technologies. Historically, this type of activity has been primarily in radiological imaging and radiation oncology, but it now has a growing breadth of involvement throughout medicine.

Many medical physicists not only provide clinical service in health care facilities, but also have faculty appointments at universities and colleges, work in the industry as scientists and/or consultants, and are responsible for teaching future medical physicists, resident physicians, medical students, and hospital technical staff.

Vanderbilt University offers the CAMPEP-accredited professional doctorate in medical physics (D.M.P.), in the diagnostic physics track.

Program Mission/Goals/Objectives

The following is based on the AAPM Strategic Plan:

• Vision: Improving health through the education of leaders in medical physics

• Mission: Advancing medicine through excellence in the education of medical physicists

Program Accreditation

Committee on Accreditation of Medical Physics Education Programs (CAMPEP)

> CAMPEP, Inc. 1631 Prince Street Alexandria, VA 22314 Phone: 571-298-1239 Fax: 571-298-1301 campep_admin@campep.org campep.org

Standing Program Committees

Master of Science in Medical Physics (M.S.M.P) and Doctor of Medical Physics (D.M.P) Steering Committee

The steering committee supervises and monitors the graduate programs in medical physics (D.M.P and M.S.M.P.). It is composed of the chair of the Department of Radiation Oncology or her/his designee, the chair of the Department of Radiology and Radiological Sciences or her/his designee, the program director, the associate program director, and one member of the medical physics faculty elected by the Medical Physics Faculty Committee.

Medical Physics Faculty Committee

The Medical Physics Faculty Committee discusses and approves admission of new students, curriculum, and policy changes for the M.S.M.P. and the D.M.P. It is composed of all medical physics teaching faculty.

Diagnostic Sub-steering Committee

The Diagnostics Sub-steering Committee supervises and monitors the medical physics programs in the diagnostic track.

Therapeutic Sub-steering Committee

The Therapeutic Sub-steering Committee supervises and monitors the medical physics programs in the therapeutic track.

Program's Major Facilities

These interdisciplinary degree programs are administered through the Department of Radiation Oncology and the Department of Radiology and Radiological Sciences in the School of Medicine and involve faculty and courses from the Vanderbilt University School of Medicine, the Department of Radiology and Radiological Sciences, the Department of Radiation Oncology, the College of Arts and Science, the Department of Physics and Astronomy, and the School of Engineering (Department of Biomedical Engineering).

Admission

The CAMPEP-accredited professional doctorate in medical physics is offered at Vanderbilt University in the diagnostic track. Students are accepted for admission only in the fall term (mid-August). No students are admitted for the spring or summer terms.

Admission Requirements

- Bachelor's degree in physics, applied physics, physical science, or engineering (with the equivalent of a minor in physics) from an accredited college or university.
- Physics prerequisite courses: Calculus III, Differential Equations, Modern Physics, Modern Physics Lab, and

Computer Programming Language or demonstrated equivalent; junior/senior level undergraduate physics courses in Electricity and Magnetism, Classical Mechanics, and Quantum Mechanics. Also, although not prerequisite, we strongly encourage some formal knowledge of statistics.

- The successful candidate should have a minimum undergraduate GPA of 3.0/4.0 or a B average.
- The general GRE is required. The suggested minimal acceptable score for admission is a total of 312, with a minimum score on the quantitative section of 156.
- The GRE advanced physics exam is not required.
- Students from non-English-speaking countries are required to demonstrate proficiency in English by submitting results of the Test of English as a Foreign Language (TOEFL). The suggested minimum acceptable score on the TOEFL exam is 600 (paper)/250 (computer)/100 (internet).

Application Process

The application process consists of two steps: Pre-screening and campus visit

I. Pre-screening: Applicants must use the electronic application system and submit the following items by mid-December of the previous admission year (exact deadline date is published at the program website: *medschool.vanderbilt.edu/ medical-physics/admission/*):

Completed electronic application form

• Transcripts for all college classes: submit transcripts via online application system **and**, **in addition**, please send an official hard copy of all college transcripts to the address listed on this page

- Three academic/professional references
- GRE General score (the GRE ETS code to submit scores
- to our program is 1871)
 - Statement of Purpose

• Application fee. The application fee is mandatory for all initiated applications and is non-refundable, regardless of whether your application is considered complete and/ or whether your application is reviewed by our application committee.

Based on these materials, a number of candidates are selected for a campus visit or teleconference (international candidates only). The candidates that have not been selected are informed that they have not passed our pre-screening process, and their applications have been declined for admission for this period.

II. Campus Visit: Applicants selected in the pre-screening process are contacted to schedule a campus visit or for tele-conference interviews (international candidates only) not later than mid-January of the admission year. In the campus visit, the applicant meets and informally interviews with the program director, faculty members, staff, and current students. The program director discusses the curricula in therapy and diagnostic physics, the M.S.M.P. and D.M.P., and the student applicant selection process. It would be most beneficial at the time of interview if the applicants have a clear understanding of their career interests in therapy and/or diagnostic medical physics and additionally have carefully considered the choice of the M.S.M.P. or D.M.P. program. Furthermore, we strongly encourage shadowing of a medical physicist prior to the campus visit. The campus interview process is generally completed

within five to six hours. Any travel expenses associated with the campus visit (airline, ground transportation, hotel, etc.) are at the expense of the student.

Offer and Acceptance

The Medical Physics Faculty Committee reviews the applications and makes a decision by late February of the admission year. Candidates are notified in writing regarding their admission status: accepted, in waiting list, or denied. Accepted candidates must officially accept or decline admission by April 15 of the admission year.

Transfer Credits

At the discretion of the program director, students may petition for transfer credit in accordance with the policy established in the School of Medicine Academic Policy chapter above.

Non-Medical Physics Student Course Enrollment

Courses offered in medical physics are open only to degreeseeking students in the Medical Physics program (i.e., D.M.P. or M.S.M.P.). On rare occasions, a course director may allow a Vanderbilt student (graduate or undergraduate) to audit or enroll in a medical physics course for credit. In these circumstances, the student must obtain permission to enroll in the course from the director of the primary program in which the student is enrolled.

Visiting (non-Vanderbilt) Students

Visiting students are not allowed to enroll in courses offered by the Medical Physics program.

Degree Requirements

Requirements to Earn Degree

Degree requirements include 50 didactic credit hours, 6 research credit hours, and 36 hours of clinical training. The didactic hours are completed in years one and two, and the clinical training credit hours and the 6 research hours are completed in years three and four.

Students in the D.M.P. program who complete all of the necessary degree requirements for the M.S.M.P. degree, including passing the oral qualifying exam, are awarded the M.S.M.P. (in passing). Thus, D.M.P. students entering year 3 are regarded as having completed a graduate degree in medical physics and can correctly be referred to as "medical physics residents."

Length and Delivery of Program

The normal time frame for completion of required course work for the doctorate in medical physics is four academic years. The maximum time for completion of this degree is no more than five years.

Curriculum and Tracks

The D.M.P. program offers a diagnostic medical physics track. The clinical medical physics experience gained in years three and four is equivalent to a two-year medical physics residency. All students and applicants may access this information and more online by visiting our webpage at *medschool.vanderbilt. edu/medical-physics/*.

Degree Requirements

Candidates for the D.M.P. must complete a total of 92 semester credit hours. Of this total, 50 semester credit hours are in didactic classroom and laboratory instruction, with an emphasis on diagnostic imaging physics.

Candidates complete an independent study project for six semester credit hours.

Students are required to complete 30 semester credit hours of professional clinical rotations. Clinical training totals a minimum of 24 months. Limited introductory clinical training called practicum (approximately three full-time equivalent months) occurs in year 2; students receive 6 professional credit hours for the successful completion of the practicum.

Other Degree Requirements

Candidates must pass an oral qualifying exam by the end of their fifth term in the program.

Course List

A full list of program courses is provided in this catalog under "Courses of Study."

Tuition, Fees, and Financial Aid

The following university costs are included with tuition:

- professional liability insurance
- student health service
- verifications

Academic Year 2019/2020 Tuition

Tuition, 1st, 2nd years Tuition, 3rd, 4th years Special, Non-Degree Seeking (per credit hour) 1,620

The total estimated cost of attendance for a first- or secondyear student is \$75,794. The estimated cost of attendance for a third- or fourth-year student is \$69,324.

(See medschool.vanderbilt.edu/financial-services/ professional-doctorate-in-medical-physics-cost-of-attendance.)

Payment of Tuition and Fees

Please refer to the School of Medicine Tuition, Fees and Financial Aid chapter of this catalog for more information about university costs and School of Medicine fees.

Additional information can be found at *finance.vanderbilt*. *edu/stuaccts*.

Student Assessment

Grades

The D.M.P. Program uses the VUSM grading scale, presented in the chapter of this catalog titled Academic Policies for All School of Medicine Programs. Academic grades for individual clinical rotations during year 3 and year 4 are on the scale A, B, C, or Fail.

B- grade is the minimum grade permitted for a core course within the medical physics curriculum.

C- grade does not earn graduate credit hours toward graduation.

Pass/Fail Grading: No Pass/Fail graded courses are accepted for credit within the program.

Repeating a Course: Students are required to repeat a core course for which a grade of C+ or below was received. Both courses are reflected on the transcript, but the second grade earned is the one used in computing the student's grade point average. Only a grade of B- or better in a core course counts toward degree requirements.

Grade Grievance Policy: Students who believe their academic performance has not been judged reasonably or fairly, or who believe their intellectual contributions have not been fairly acknowledged, should consult the program director with any concerns. The student should seek reconciliation first with the course instructor, followed by discussions and potential reconciliation with the program director and associate director. Further consideration may be sought by presentation before the Medical Physics Faculty Committee and, if necessary, for a final decision by the senior associate dean of health sciences education.

Auditing a Course: Students cannot audit a core or an elective course that is included in the required 50 didactic hours. A student may audit a course (above the 50-hour didactic required credit hours) with the instructor's and program director's permission. Only students registered for regular courses are allowed to audit a course. Students who officially audit are expected to attend class regularly, take the required exams, and receive a minimum grade of C- for the course. Audits are recorded on the student's transcript.

Examinations: Format of student examinations is at the discretion of the course instructor. Students are expected to be present for the exam on the scheduled exam date. Should a student knowingly have to be absent on the scheduled exam date, the student should meet with the instructor and ask to take the exam early. Should the student miss class the day of the scheduled exam, the student must meet with the instructor for instructions concerning taking a makeup exam.

Note: Some instructors may not allow make-up exams or the make-up exams may be different from the original exam. Additionally, students who missed an exam shall not discuss exam materials with any student until the make-up exam has been taken.

Clinical Assessment

At the conclusion of year 2 (summer term), the student is assigned a clinical physics mentor by the program director. The clinical physics mentor is responsible for the student's completion of year 3 and year 4 requirements. Each of the clinical rotations for year 3 is repeated in year 4. The intent of the repeat rotations is that the student observe and participate during year 3 and gain the necessary training and experience for competency in each clinical area in year 4. Evaluation for completion of each rotation may include documentation, reports, and competency examinations. The clinical physics mentor is responsible for collection and scoring of the evaluation materials. Academic grades for individual rotations are on the scale A, B, C, or Fail. Semester grades are submitted to the School of Medicine Registrar's Office with a copy given to the program director. The student must successfully complete the necessary requirements and acquired clinical skills before the clinical physics mentor and program director allow progression to the next rotation. Should the student not successfully complete a rotation with the minimum grade of C, the clinical physics mentor and program director meet with the student to discuss remedial action to resolve the discrepancy. The student is required to correctly complete all documentation and reports in a timely manner and may be required to take a written or oral examination over the materials within that rotation; the student's failing semester grade cannot be raised above a grade of C. Should the student not successfully complete the remedial assignments and/or fail the oral examination, that rotation must be retaken at the conclusion of year 4 (summer term). Hence, this extends clinical rotations beyond the normal twenty-four-month period. The D.M.P. medical physics program and the School of Medicine require a cumulative GPA of 3.0 at the time of graduation. With the successful completion of all clinical rotations, the student will have received a total of 30 credit hours during years 3 and 4.

Other Assessment Systems

D.M.P. Research Project: During the summer of year 2 and the fall of year 3, each D.M.P. student chooses a clinical research project. The project must be approved by both the program director and the clinical physics director. A mentor is selected to guide the student's research efforts. The project should be approximately equivalent to a three-to-four-month full-time effort (FTE). The project results are in a written format consistent with a manuscript submission to a medical physics scientific journal. The project is defended during a student presentation to faculty, staff, and students. Projects should be completed on or before March 30 of year 4.

Board Exams

Recommended Test Dates for the American Board of Radiology (ABR) Exams Parts I and II: Students successfully completing year 1 are encouraged to take the ABR Exam Part I during the summer between year 1 and year 2. Students successfully completing year 4 are encouraged to take ABR Exam Part II during the summer after their graduation.

Progress and Promotion

Satisfactory Academic Progress and Good Standing

A term average of 3.0 is required to remain in "good standing."

Graduation

A cumulative grade point average of 3.0 is required for graduation.

Allowance for Delaying Graduation

Graduation may be delayed beyond the normal time required to complete for formal remediation or approved leave(s) of absence. (See D.M.P. program Leave of Absence section.)

Program Commencement

All degree requirements (didactic, research, and clinical) are satisfied by the end of June in the fourth year; the students are dismissed by July 1 of that year. A graduation ceremony is organized at that time to celebrate their achievements. No diplomas are presented during the program ceremony. The D.M.P. diplomas are formally issued by the university at the end of the summer term of the fourth year (mid-August). Those students who wish to "walk" are permitted to do so during Commencement the following May.

Formal Remediation

Formal Remediation Plan

A student whose cumulative grade point average falls below 3.0 is considered as "not in good standing." A remedial action plan is developed with the student, appropriate faculty member(s), and the program director. The remedial action plan may result in the student's having to take additional time to complete the degree requirements. If, at the end of the next two consecutive terms, the cumulative grade point average is still below 3.0, adverse action may be taken, including probation and/or dismissal.

Probation and Dismissal

The D.M.P. program follows School of Medicine policy for formal remediation, probation, dismissal, and appeals. See the Academic Policies for All School of Medicine Programs chapter of this catalog for more information on these topics.

Student Support and Advisory Services

Academic and Career Advisory Resources

The program director has an open door policy for all students in the D.M.P. program. Students are also assigned a clinical physics mentor during years 3 and 4. The mentor guides the student through the clinical requirements of the program and ensures completion and documentation of the student's clinical assessments.

Health and Wellness

See Vanderbilt University Student Resources section in the Life at Vanderbilt chapter of this catalog.

Other Program Policies

Program Evaluation

The program evaluation—for both M.S.M.P. and D.M.P.—is performed with four different metrics:

- 1. Student course evaluations, administered by the School of Medicine for every course offered in the program at the end of the term.
- 2. After student graduation, successful passing of Part 2 of the American Board of Radiology certification examination is assessed.

- 3. After student graduation, successful job placement is assessed.
- 4. Two years after the graduate takes Part 3 of the American Board of Radiology certification examination, a survey is conducted to assess the graduate's overall satisfaction with the program.

Specific feedback from course evaluations is reviewed by the faculty member responsible for the course and the program director with the goal of improvements in the presentation of course material during the next offering of the course.

Other materials are evaluated by the program director and subsequently by the faculty with the aim of providing overall program feedback that helps direct program modifications and improvements. These evaluations occur on an annual basis.

Leave of Absence

Students who wish to interrupt their study (personal, sickness, etc.) must request a leave of absence from the program director. Students may consult with Vanderbilt University Student Access Services (*vanderbilt.edu/student-access/*) when contemplating a leave of absence, and program administrators may consult with student access services when evaluating a request for leave of absence. Granting of a leave of absence is at the discretion of the Medical Physics Faculty Committee acting within the policies and procedures of the Vanderbilt University School of Medicine. Students who do not request and receive approval for a leave of absence may be required to request reinstatement to the program. Students' requests are based on the following considerations:

- A. Before the conclusion of the 1st semester and/or 2nd semester of the first year, a student may seek leave of absence status for the remainder of the academic year. (Caveat: A student who has been granted a leave of absence will not complete the total M.S.M.P. degree requirements within the minimum time of 21–22 months.)
- B. During the 1st year summer term, 2nd year fall term, or 2nd year spring term, a student may seek leave of absence status for the remainder of the term (and up to a total of 6 months thereafter). (Caveat: A student who has been granted a leave of absence will not complete the total M.S.M.P. degree requirements within the minimum time of 21–22 months.)
- or
- C. Following conferral of the M.S. degree, at any time during year 3 or year 4, a student may seek leave of absence status for the remainder of a three-month rotation (and up to a total of three months thereafter). The student can petition the Medical Physics Faculty Committee to reenter rotations at the beginning of a new term. (**Caveat**: A student who has been granted a leave of absence will not complete the total D.M.P. degree requirements within the minimum time of 46 months.)

Students may request a leave of absence provided the two following conditions are met:

- 1. The student possesses "in good standing" student status.
- 2. The student petitions in writing a request for a leave of absence stating the rationale for the leave. Should the request be for a medical leave of absence, the student must submit a Vanderbilt University School of Medicine-sanctioned health professional's letter of support.

Students petition the Medical Physics Faculty Committee to reenter rotations at the beginning of a new term. Students requesting a medical leave of absence must additionally provide a Vanderbilt University School of Medicine-sanctioned health professional's letter stating that the student's health is sufficient for return to classes.

Should a student not meet the requirements above, consideration for permission to reapply and re-enter the applicant pool for the next school year is made by the Medical Physics Faculty Committee on a student-by-student basis.

Attendance and Leave

All students are expected to attend each class period. Students should notify the instructor should they knowingly have to miss a class. It is the responsibility of the student to obtain class notes and assignments. Penalty for non-class attendance is at the discretion of the instructor and/or the program director.

Vacation Time (year 3 and year 4): Fifteen vacation days per year are granted to D.M.P. students in year 3 and year 4. The student must complete an *absence from duty* form and have it approved by and submitted to the program director.

Holidays: The following days are designated as holidays by the university:

- New Year's Day
- Memorial Day
- July 4th
- Labor Day
- Thanksgiving
- Christmas

Sick Time: Sick days not to exceed ten days per year. Physician note required for greater than two consecutive sick days. Time-off for illness in excess of ten sick days per calendar year is subtracted from vacation time bank. Sick days are not to be interpreted as additional vacation time.

Interview Days: Students in year 4 are allowed a maximum of four interview days over and above the fifteen vacation days. Permission must be requested and granted by the program director. The student must also complete an *absence from duty* form and have it approved by and submitted to the program director.

Student Work Policy

Students in year 1 are allowed to work part time up to a maximum of 20 hours per week with permission of the program director. Students in year 2 are allowed to work part time up to a maximum of 15 hours per week with permission of the program director. Students in year 3 and year 4 are considered as residents and hence are required to be in the respective clinical department at a minimum of 40+ hours per week; hence, regular, part-time employment is discouraged.

Professional Conduct

Students are expected to attend class, remain in "good academic standing" academically, participate in clinical activities (including QA procedures), and interact with faculty, staff, students, and patients in a professional manner. Additionally, students are to exhibit personal behavior in accordance with the School of Medicine student conduct codes. A student who does not exhibit professional conduct meets with the program director, and a remedial action plan is developed with the student, appropriate faculty member(s), and the program director. If professional conduct does not improve, disciplinary action may be taken that could eventually lead to advising the student to withdraw or face dismissal.

Honor Code

Each student will be compliant with the Vanderbilt University School of Medicine Honor Code guidelines. Every academic year, each student will sign and date a copy of the Honor Code indicating that the student will follow the Honor Code rules and requirements.

Dress Code

Students who enter the clinical areas (Radiation Oncology and Diagnostic Radiology) must dress appropriately as professionals, being aware of the presence of patients in a clinicalservices department. Blue jeans, t-shirts, shorts, and beach footwear are considered non-professional dress.

Vanderbilt ID

Vanderbilt students and employees are required to wear Vanderbilt ID badges at all times while on campus. This is a security matter and is enforced by Vanderbilt representatives including the Vanderbilt University Police Department. Some campus buildings require Vanderbilt ID badge recognition for entrance.

Vanderbilt Radiation Badge

Students attending labs and/or practicum sessions where x-ray equipment is present should wear a Vanderbilt radiation badge. Third- and fourth-year students must wear a Vanderbilt radiation badge at all times when they are in the clinic. Vanderbilt radiation badges—granted by the Vanderbilt Environmental Health and Safety Office—are processed for all new students during the mandatory orientation session before starting the program.

MASTER OF SCIENCE IN MEDICAL PHYSICS

Program Overview

Medical physics is an applied branch of physics devoted to the application of concepts and methods from physics to the diagnosis and treatment of human disease.

Medical physicists are scientists concerned with three primary areas of activity: clinical service and consultation, research and development, and teaching. Clinically, medical physicists are called upon to contribute scientific advice and resources to solve physical problems arising in radiological medical physics. Medical physics research typically involves the discovery and development of new instrumentation and technology, new medical diagnostic and therapeutic procedures, and tests using existing technologies. Historically, this type of activity has been primarily in radiological imaging and radiation oncology, but it now has a growing breadth of involvement throughout medicine. Many medical physicists not only provide clinical service in health care facilities, but also have faculty appointments at universities and colleges, work in the industry as scientists and/or consultants, and are responsible for teaching future medical physicists, resident physicians, medical students, and hospital technical staff.

Vanderbilt University offers the CAMPEP-accredited master of science in medical physics (M.S.M.P.), in therapy and diagnostic physics tracks.

Program Mission/Goals/Objectives

The following is based on the AAPM Strategic Plan:

• Vision: Improving health through the education of leaders in medical physics

• Mission: Advancing medicine through excellence in the education of medical physicists

Program Accreditation

Committee on Accreditation of Medical Physics Education Programs (CAMPEP)

CAMPEP, Inc. 1631 Prince Street Alexandria, VA 22314 Phone: 571-298-1239 Fax: 571-298-1301 campep_admin@campep.org campep.org

Standing Program Committees

Master of Science in Medical Physics and Doctor of Medical Physics Steering Committee

The steering committee supervises and monitors the graduate programs in medical physics (D.M.P and M.S.M.P.). It is composed of the chair of the Department of Radiation Oncology or her/his designee, the chair of the Department of Radiology and Radiological Sciences or her/his designee, the program director, the associate program director, and one member of the medical physics faculty elected by the Medical Physics Faculty Committee.

Medical Physics Faculty Committee

The Medical Physics Faculty Committee discusses and approves admission of new students, curriculum, and policy changes for the M.S.M.P. and the D.M.P. It is composed of all medical physics teaching faculty.

Therapeutic Sub-steering Committee

The Therapeutic Sub-steering Committee supervises and monitors the medical physics program in the therapeutic track.

Diagnostic Sub-steering Committee

The Diagnostic Sub-steering Committee supervises and monitors the medical physics programs in the diagnostic track.

Program's Major Facilities

These interdisciplinary degree programs are administered through the Department of Radiation Oncology and the Department of Radiology and Radiological Sciences in the School of Medicine and involve faculty and courses from the Vanderbilt University School of Medicine, the Department of Radiology and Radiological Sciences, the Department of Radiation Oncology, the College of Arts and Science, the Department of Physics and Astronomy, and the School of Engineering (Department of Biomedical Engineering).

Admission

The CAMPEP-accredited master of science in medical physics is offered at Vanderbilt University in the diagnostic and the therapeutic tracks. Students are accepted for admission in the fall term (mid-August). No students are admitted for the spring or summer terms.

Admission Requirements

• Bachelor's degree in physics, applied physics, physical science, or engineering (with the equivalent of a minor in physics) from an accredited college or university.

• Physics prerequisites: Calculus III, Differential Equations, Modern Physics, Modern Physics Lab, and Computer Programming Language or demonstrated equivalent; junior/ senior level undergraduate physics courses in Electricity and Magnetism, Classical Mechanics, and Quantum Mechanics. Also, although not prerequisite, we strongly encourage some formal knowledge of statistics.

• The successful candidate should have a minimum undergraduate GPA of 3.0/4.0 or a B average.

• The general GRE is required. The suggested minimum acceptable score for admission is a total of 312, with a minimum score on the quantitative section of 156.

• The GRE advanced physics exam is not required.

• Students from non-English speaking countries are required to demonstrate proficiency in English by submitting results of the Test of English as a Foreign Language (TOEFL). The suggested minimal acceptable score on the TOEFL exam is a 600 (paper)/250 (computer)/100 (internet).

Application Process

The application process consists of two steps: Pre-screening and campus visit

I. Pre-screening: Applicants must use the electronic application system and submit the following items by mid-December of the previous admission year (exact deadline date is published at the program website: *medschool.vanderbilt.edu/ medical-physics/admission/*):

• Completed electronic application form

• Transcripts for all college classes: submit transcripts via online application system **and**, **in addition**, please send an official hard copy of all college transcripts to the address listed on this page

• Three academic/professional references

• GRE General score (the GRE ETS code to submit scores to our program is 1871)

• Statement of Purpose

• Application fee. The application fee is mandatory for all initiated applications and is non-refundable, regardless of whether your application is considered complete and/ or whether your application is reviewed by our application committee.

Based on these materials, a number of candidates are selected for a campus visit or teleconference (international candidates only). The candidates that have not been selected are informed that they have not passed our pre-screening process, and their applications have been declined for admission for this period.

II. Campus Visit: Applicants selected in the pre-screening process are contacted to schedule a campus visit or for teleconference interviews (international candidates only) not later than mid-January of the admission year. In the campus visit, the applicant meets and informally interviews with the program director, faculty members, staff, and current students. The program director discusses the curricula in therapy and diagnostic physics, the M.S.M.P. and D.M.P., and the student applicant selection process. It would be most beneficial at the time of interview if the applicants have a clear understanding of their career interests in therapy and/or diagnostic medical physics and additionally have carefully considered the choice of the M.S.M.P. or D.M.P. program. Furthermore, we strongly encourage shadowing of a medical physicist prior to the campus visit. The campus interview process is generally completed within five to six hours. Any travel expenses associated with the campus visit (airline, ground transportation, hotel, etc.) are at the expense of the student.

Offer and Acceptance

The Medical Physics Faculty Committee reviews the applications and makes a decision by late February of the admission year. Candidates are notified in writing regarding their admission status: accepted, in waiting list, or denied. Accepted candidates must officially accept or decline admission by April 15 of the admission year.

Transfer Credits

At the discretion of the program director, students may petition for transfer credit in accordance with the policy established in the School of Medicine Academic Policy chapter above.

Non-Medical Physics Student Course Enrollment

Courses offered in medical physics are open only to degreeseeking students in the Medical Physics program (i.e., D.M.P. or M.S.M.P.). On rare occasions, a course director may allow a Vanderbilt student (graduate or undergraduate) to audit or enroll in a medical physics course for credit. In these circumstances, the student must obtain permission to enroll in the course from the director of the primary program in which the student is enrolled.

Visiting (non-Vanderbilt) Students

Visiting students are not allowed to enroll in courses offered by the medical physics program.

Degree Requirements

Requirements to Earn Degree

Candidates for the M.S.M.P. must complete a total of 44 semester credit hours. Of this total, 38 semester credit hours are in didactic classroom and laboratory instruction with an emphasis on either diagnostic imaging or radiotherapy physics. Students may select either a thesis option or non-thesis option.

- Degree requirements for the non-thesis option include 38 didactic credit hours and 6 credit hours of clinical practicum. Students in the non-thesis option are required to complete 6 semester credit hours of professional introductory clinical rotations or practicum. The practicum is specific to the areas of clinical diagnostic and nuclear medicine imaging or radiotherapy treatment planning and associated techniques. Students in the non-thesis option may choose to participate in a 1–2 semester credit hour independent study.
- Degree requirements for the thesis option include 38 didactic credit hours and six (6) independent study credit hours. The six independent study hours are required in order to successfully complete the M.S.M.P. thesis project, which includes completion of a master's thesis.

Length and Delivery of Program

The normal time frame for completion of required course work for the master of science in medical physics is two academic years (five terms). The maximum time for completion of this degree is no more than three years.

Curriculum and Tracks

The M.S.M.P. program offers tracks in both radiotherapy medical physics and diagnostic medical physics. Students may choose a thesis or non-thesis option in either discipline. All students and applicants may access additional information by visiting our website at *medschool.vanderbilt.edu/ medical-physics/*.

Other Degree Requirements

Candidates must pass an oral qualifying exam before the end of their final term in the program.

Course List

A full list of program courses is provided in this catalog under "Courses of Study."

Tuition, Fees, and Financial Aid

The following university costs are included with tuition:

- professional liability insurance
- student health service
- verifications

Academic Year 2019/2020 Tuition

Tuition, 1st year	\$38,900
Tuition, 2nd year	25,940
Special, Non-Degree Seeking (per credit hour)	1,620

The total estimated cost of attendance for a first-year student is \$74,179. The estimated cost of attendance for a secondyear student is \$52,654.

(See medschool.vanderbilt.edu/financial-services/ master-of-science-in-medical-physics-cost-of-attendance.)

Payment of Tuition and Fees

Additional information can be found at *finance.vanderbilt.edu/ stuaccts*.

Student Assessment

Grades

The M.S.M.P. program uses the VUSM grading scale, presented in the chapter of this catalog titled Academic Policies for All School of Medicine Programs .

B- grade is the minimum grade permitted for a core course within the medical physics curriculum.

C- grade does not earn graduate credit hours toward graduation.

Pass/Fail Grading: No Pass/Fail graded courses are accepted for credit within the program.

Repeating a Course: Students are required to repeat a core course for which a grade of C+ or below was received. Both courses are reflected on the transcript, but the second grade earned is the one used in computing the student's grade point average. Only a grade of B- or better in a core course counts toward degree requirements.

Grade Grievance Policy: Students who believe their academic performance has not been judged reasonably or fairly, or who believe their intellectual contributions have not been fairly acknowledged, should consult the program director with any concerns. The student should seek reconciliation first with the course instructor, followed by discussions and potential reconciliation with the program director and associate director. Further consideration may be sought by presentation before the Medical Physics Faculty Committee and, if necessary, for a final decision by the senior associate dean of health sciences education.

Auditing a Course: Students cannot audit a core or an elective course that is included in the required 38 didactic hours. A student may audit a course (above the 38-hour didactic required credit hours) with the instructor's and program director's permission. Only students registered for regular courses are allowed to audit a course. Students who officially audit are expected to attend class regularly, take the required exams, and receive a minimum grade of C- for the course. Audits are recorded on the student's transcript.

Examinations: Format of student examinations is at the discretion of the course instructor. Students are expected to be present for the exam on the scheduled exam date. Should a student knowingly have to be absent on the scheduled exam date, the student should meet with the instructor and ask to take the exam early. Should the student miss class the day of the scheduled exam, the student must meet with the instructor for instructions concerning taking a makeup exam.

Note: Some instructors may not allow make-up exams or the make-up exams may be different from the original exam. Additionally, students who missed an exam shall not discuss exam materials with any student until the make-up exam has been taken.

Board Exams

Recommended Test Dates for the American Board of Radiology (ABR) Exams Part I and II: Students successfully completing year 1 are encouraged to take the ABR Exam Part I during the summer between year 1 and year 2.

Progress and Promotion

Satisfactory Academic Progress and Good Standing

A term average of 3.0 is required to remain in "good standing

Graduation

A cumulative average of 3.0 is required to graduate.

Allowance for Delaying Graduation

Graduation may be delayed beyond the normal time required to complete for formal remediation or approved leave(s) of absence. (See M.S.M.P. program Leave of Absence section below.)

Program Commencement

Degrees are granted by the university in May, August, and December. Those students who wish to "walk" but did not complete all degree requirements by May of that year are permitted to walk during the School of Medicine Commencement of the following year.

Formal Remediation

Formal Remediation Plan

A student whose cumulative grade point average falls below 3.0 is considered as "not in good standing." A remedial action plan is developed with the student, appropriate faculty member(s), and the program director. The remedial action plan may result in the student's having to take additional time to complete the degree requirements. If at the end of the next two consecutive terms, the cumulative grade point average is still below 3.0, adverse action may be taken including probation and/or dismissal.

Probation and Dismissal

The M.S.M.P. program follows School of Medicine policy for formal remediation, probation, dismissal, and appeals. See the

Academic Policies for All School of Medicine Programs chapter of this catalog for more information on these topics.

Student Support and Advisory Services

Academic and Career Advisory Resources

The program director has an open door policy for all students in the M.S.M.P. program.

Health and Wellness

See Vanderbilt University Student Resources in the Life at Vanderbilt chapter of this catalog.

Other Program Policies

Program Evaluation

The program evaluation—for both M.S.M.P. and D.M.P.—is performed with four different metrics:

- 1. Student course evaluations, administered by the School of Medicine for every course offered in the program at the end of the term.
- After student graduation, successful passing of Part 2 of the American Board of Radiology certification examination is assessed.
- After student graduation, successful job placement is assessed.

Two years after the graduate takes Part 3 of the American Board of Radiology certification examination, a survey is conducted to assess the graduate's overall satisfaction with the program.

Specific feedback from course evaluations is reviewed by the faculty member responsible for the course and the program director with the goal of improvements in the presentation of course material during the next offering of the course.

Other materials are evaluated by the program director and subsequently by the faculty with the aim of providing overall program feedback that helps direct program modifications and improvements. These evaluations occur on an annual basis.

Leave of Absence

Students who wish to interrupt their study (personal, sickness, etc.) must request a leave of absence from the program director. Students may consult with Vanderbilt University Student Access Services (*vanderbilt.edu/student-access/*) when contemplating a leave of absence, and program administrators may consult with student access services when evaluating a request for leave of absence. Granting of a leave of absence is at the discretion of the Medical Physics Faculty Committee acting within the policies and procedures of the Vanderbilt University School of Medicine. Students who do not request and receive approval for a leave of absence may be required to request reinstatement to the program. Students' requests are based on the following considerations:

A. Before the conclusion of the 1st semester and/or 2nd semester of the first year, a student may seek leave of absence status for the remainder of the academic year.

(Caveat: A student who has been granted a leave of absence will not complete the total M.S.M.P. degree requirements within the minimum time of 21–22 months.)

B. During the 1st year summer term, 2nd year fall term, or 2nd year spring term, a student may seek leave of absence status for the remainder of the term (and up to a total of 6 months thereafter). (Caveat: A student who has been granted a leave of absence will not complete the total M.S.M.P. degree requirements within the minimum time of 21–22 months.)

Students may request a leave of absence provided the two following conditions are met:

- 1. The student possesses "in good standing" student status
- 2. The student petitions in writing a request for a leave of absence stating the rationale for the leave. Should the request be for a medical leave of absence, the student must submit a Vanderbilt University School of Medicine-sanctioned health professional's letter of support.

Students requesting a medical leave of absence must additionally provide a Vanderbilt University School of Medicinesanctioned health professional's letter stating that the student's health is sufficient for return to classes.

Should a student not meet the requirements above, consideration for permission to reapply and re-enter the applicant pool for the next school year is made by the Medical Physics Faculty Committee on a student-by-student basis.

Attendance and Leave

All students are expected to attend each class period. Students should notify the instructor should they knowingly have to miss a class. It is the responsibility of the student to obtain class notes and assignments. Penalty for non-class attendance is at the discretion of the instructor and/or the program director.

Holidays: The following days are designated as holidays by the university:

- New Year's Day
- Memorial Day
- July 4th
- Labor Day
- Thanksgiving
- Christmas

Student Work Policy

Students in year 1 are allowed to work part time up to a maximum of 20 hours per week with permission of the program director. Students in year 2 are allowed to work part time up to a maximum of 15 hours per week with permission of the program director.

Professional Conduct

Students are expected to attend class, remain in "good academic standing" academically, participate in clinical activities (including QA procedures), and interact with faculty, staff, students, and patients in a professional manner. Additionally, students are to exhibit personal behavior in accordance with the School of Medicine student conduct codes. A student who does not exhibit professional conduct meets with the program director, and a remedial action plan is developed with the student, appropriate faculty member(s), and the program director. If professional conduct does not improve, disciplinary action may be taken that could eventually lead to advising the student to withdraw or face dismissal.

Honor Code

Each student will be compliant with the Vanderbilt University School of Medicine Honor Code guidelines. Every academic year, each student will sign and date a copy of the Honor Code indicating that the student will follow the Honor Code rules and requirements.

Dress Code

Students who enter the clinical areas (Radiation Oncology and Diagnostic Radiology) must dress appropriately as professionals, being aware of the presence of patients in a clinicalservices department. Blue jeans, t-shirts, shorts, and beach footwear are considered non-professional dress.

Vanderbilt ID

Vanderbilt students and employees are required to wear Vanderbilt ID badges at all times while on campus. This is a security matter and is enforced by Vanderbilt representatives including the Vanderbilt Police Department. Some campus buildings require Vanderbilt ID badge recognition for entrance.

Vanderbilt Radiation Badge

Students attending labs and/or practicum sessions where x-ray equipment is present should wear a Vanderbilt radiation badges. Vanderbilt radiation badges—granted by the Vanderbilt Environmental Health and Safety office—are processed for all new students during the mandatory orientation session before starting the program.

Master of Genetic Counseling

Program Overview

The Master of Genetic Counseling (M.G.C.) is built on a foundation of medical education excellence, broad clinical expertise and innovation in genetics research through collaboration with Vanderbilt University and Vanderbilt University Medical Center. The M.G.C. is awarded by Vanderbilt University School of Medicine, with academic administrative oversight provided by the Vanderbilt University School of Medicine Office of Health Sciences Education. The program is offered in collaboration with the Vanderbilt Genetics Institute of Vanderbilt University Medical Center. More information about the Vanderbilt M.G.C. program is available online, at *medschool.vanderbilt.edu/mgc*.

Program Mission/Goals/Objectives

Vanderbilt Genetics Institute Mission

The mission of the Vanderbilt Genetics Institute is to promote genomic discovery and advance understanding of the human genome. Application of new discoveries ultimately translates into improved patient care through better diagnosis, treatment, and prevention of human disease.

Vanderbilt Master of Genetic Counseling Program Mission

The mission of the Vanderbilt M.G.C. program is to graduate genetic counseling leaders in the field of genetics and genomic medicine.

The Vanderbilt M.G.C. program is dedicated to the matriculation of diverse graduate students and empowering them to succeed in the expanding field of genetics, genomics and personalized medicine. This, in turn, provides increased access to care for health care consumers.

Vision

The vision of the Vanderbilt M.G.C. program is to be on the forefront of genetics and genetic services research, to create a nurturing environment to foster genetic counseling training, and to nest the program in a strong, connected academic and medical community.

Program Accreditation

The Vanderbilt University Master of Genetic Counseling program has been granted accreditation as a New Program by the Accreditation Council for Genetic Counseling (ACGC) effective January 31, 2019. Additional information may be found on the ACGC website at *gceducation.org* and on the VUSM website at *medschool.vanderbilt.edu/mgc*.

ACGC P.O. Box 15632 Lenexa, KS 66285 (913) 895-4629 http://www.gceducation.org

Standing Program Committees

Vanderbilt Genetic Counseling Program Advisory Board

The Vanderbilt Genetic Counseling Program Advisory Board has an overarching responsibility to assist in the development and ongoing evaluation of the graduate program. The board is responsible for ensuring that the curriculum is in line with the program's mission and with the ACGC accreditation standards for the genetic counseling profession. The advisory board consists of the following individuals:

Martha Dudek, Chair (Ex officio). Laura Duncan, Rizwan Hamid, Gillian Hooker, Melinda New, Tuya Pal, Tabby Perry, Tyler Reimschisel, Dan Roden, Donna Rosenstiel, Samantha Smith, Georgia Wiesner. Ex officio: Donald W. Brady, Nancy Cox.

Program Implementation Committee

The Program Implementation Committee includes the program director, medical director, assistant program director, practicum coordinator and program coordinator. This committee convenes regularly to ensure smooth program operations.

Martha Dudek, Chair. Heather Herrmann, Tyler Reimschisel, Jill Slamon. Ex officio: Sonia Mitchell.

Admission Committee

The Admission Committee is responsible for reviewing applications for the M.G.C. program, for inviting applicants to interview, and for making recommendations of candidates for admission to the program.

The Admission Committee is appointed and chaired by the program director. It consists of seven to nine M.G.C. faculty members (one of which is also a member of the Diversity Committee). Members may include individuals from the program leadership. Committee members serve a threeyear term, with inaugural committee members appointed for a three-year term within a staggered succession schedule.

Martha Dudek, Chair. Elly Brokamp, Laura Duncan, Brighton Goodhue, Caitlin Grabarits, Heather Hermann, Jill Slamon, Kelly Taylor, Brenda Zuniga.

Curriculum Committee

The Curriculum Committee is charged with development and oversight of the M.G.C. program curriculum. The Curriculum Committee is appointed by the program director.

Martha Dudek, Chair (Ex officio). Jill Slamon, Vice-Chair.Elly Brokamp, Anna Childers, Laura Duncan, Caitlin Grabarits, Heather Herrmann, Gillian Hooker, Randa Newman, Tyler Reimschisel, Kelly Taylor.

Research Review Committee (RRC)

The role of the Research Review Committee is to establish and ensure adherence to policies and procedures for the M.G.C. thesis requirement. The RRC develops guidelines and recommends resources to ensure the success of each student in thesis development and completion. The RRC is appointed by the program director and consists of at least three M.G.C. faculty members. The RRC is responsible for 1) oversight implementation of the thesis process into the curriculum and 2) supervision of the faculty research advisers.

Gillian Hooker, Chair. Randa Newman, Kelly Taylor.

Diversity Committee

The purpose of the Diversity Committee is to increase the number of underrepresented students in the field of genetics counseling. The committee meets annually to establish and review M.G.C. program diversity goals and its progress toward meeting them. Committee members are appointed by the M.G.C. program director. The Diversity Committee includes at least one member from each of the following groups: M.G.C. program leadership, M.G.C. Advisory Board, M.G.C. faculty, and at least one former or current student.

Martha Dudek, Chair (Ex officio). Tuya Pal, Brenda Zuniga. Two additional members to be recruited from former students and other local genetic counselors

Academic Progress and Promotion Committee (APPC)

The APPC meets twice per academic year to review each student's academic progress through the program curriculum. The APPC has the responsibility to make recommendations to the program director concerning promotion, remedial action, or dismissal, as appropriate, for each student in the program.

The Academic Progress and Promotion Committee consists of six members with a quorum being at least 3 voting members present. The six voting members are program faculty members, all whom are board certified in genetics/genetic counseling or have extensive experience in training or working with genetic counselors. Voting members would serve for three years. The program director is a non-voting member, ex officio.

The fall meeting of the APPC each year reviews academic progress for both cohorts of students. The spring meeting reviews academic progress for both cohorts and also makes promotion decisions (for first-year cohort, decisions include promotion to second year; for second-year cohort, decisions include recommendation of students to the dean for graduation).

Program's Major Facilities

The M.G.C. office is located in Light Hall room 510. Classes are held as assigned on the 4th or 5th floor of Light Hall. Students complete all of their rotations at Vanderbilt University Medical Center sites. Students may consider an off-campus rotation as an elective. Please visit *medschool.vanderbilt.edu/ mgc/practicum* for more information about practica.

Admission

Admission Requirements

Eligibility

1. Eligible candidates for the Vanderbilt M.G.C. program are required to meet the following criteria:

- Completion of a four-year baccalaureate degree from an accredited institution with course work in biology, chemistry, biochemistry, general or human genetics, statistics, and psychology.
- Graduate Record Examination (GRE) taken within the last five years. For information about registering for the GRE go to: http://www.ets.org/gre/. Official test scores should be sent to Vanderbilt University (1871).

2. Applicants are encouraged to have had experiences that demonstrate an interest in and familiarity with the field of genetic counseling. This experience could be obtained through 3. Applicants are also expected to possess an ability to communicate clearly and compassionately with others. Individuals for whom English is not their native language are required to provide scores from the Test of English as a Foreign Language (TOEFL), which is administered by the Educational Testing Service in Princeton, New Jersey. Information about this exam is available at *www.ets.org/toefl/*. The minimum acceptable score on the paper-based TOEFL is 570, and for the Internet-based test, 88. The Vanderbilt Institution Code for TOEFL is 1871.

4. The Vanderbilt Master of Genetic Counseling is unable to accept international students at this time. Students who are permanent residents (Green Card holders) are eligible to apply.

Application Process

- 1. Apply through the online Vanderbilt University application *apply.vanderbilt.edu/apply/*.
- 2. Register with the Genetic Counseling Admissions Match through National Matching Services at *natmatch.com/ gcadmissions/index.html*.

Complete information about the application process is available online at *medschool.vanderbilt.edu/mgc/admission/apply*.

Providing Transcripts

Applicants must upload an unofficial copy of transcripts from prior undergraduate and graduate work as part of their online application for admission. This is used to pre-screen for completion of prerequisite courses. An official transcript of completed courses is required before February 15th, documenting completion of their prerequisite course work and degrees.

For students receiving the bachelor's degree (or ad hoc prerequisite course work) after February 15, a final official transcript is required prior to matriculation into the M.G.C. program.

To be considered official, a transcript must be sent directly from the institution to Vanderbilt University. Official transcripts can be emailed through the school's secure electronic service or mailed to Vanderbilt Center for Data Management at the addresses below. All other transcripts are considered unofficial.

Email: CDM@vanderbilt.edu

Mail: Center for Data Management Vanderbilt University PMB 407833 2301 Vanderbilt Place Nashville, TN 37240-7833

Selection Criteria, Offer, and Acceptance

The M.G.C. Admission Committee values diverse academic backgrounds in its applicants. Applicants should have an academically rigorous undergraduate experience, to ensure they are well prepared for graduate work.

The M.G.C. program does not have a minimum GPA requirement. Graduate Record Examination (GRE) scores are required to complete the application; however, no minimum score exists for admission to the M.G.C. The M.G.C. Admission Committee takes a holistic approach (including grades and test scores, in addition to other factors) to ensure each applicant's potential to be academically equipped to succeed in the M.G.C. program.

In addition to evidence of academic rigor, the MCG Admission Committee considers the following experiences and applicant characteristics when reviewing applications:

- Understanding of the field of genetic counseling
- Unique interests
- · Leadership skills
- Life experiences
- Communications skills
- Community involvement
- Exposure to research process
- Clinical exposure
- Work experience
- Cultural understanding

Transfer Students/Credits

The M.G.C. is unable to take transfer students.

Non-degree-seeking Students

With permission of the program director, non-degree-seeking students may audit or enroll for credit in courses offered by the M.G.C. program.

Visiting Students

Students enrolled in a ACGC accredited program may contact program director for information about clinical rotations at VUMC affiliated sites. Institutional agreements are arranged through VUMC.

Degree Requirements

Requirements to Earn Degree

- 1. Minimum of 60 hours of didactic course work, with an overall grade point average of at least a 'B';
- 2. Successful completion of required practica; and
- 3. Successful completion of a research project.

Length and Delivery of Program

Candidates for the M.G.C. degree normally spend five academic semesters at Vanderbilt and are expected to be enrolled in the School of Medicine during each fall, spring, or summer semester until completion of the degree.

The normal time for completion of the required course work for the M.G.C. degree is 21 months, over five consecutive terms. If an individual requires additional time due to unusual circumstances (e.g., remediation, personal leave of absence), a student may, with approval of the M.G.C. program director, take up to three years to complete the degree.

Curriculum

Vanderbilt M.G.C. students participate in a wide range of activities during their time in the program to prepare them for

the American Board of Genetic Counseling (ABCG) certifying exam, including course work, practicum experiences, and research experiences.

The normal progression of a student through the M.G.C. curriculum is outlined at *medschool.vanderbilt.edu/mgc*.

The curriculum draws its content from various departments, and courses are taught by faculty members from multiple disciplines. The curriculum is subject to annual review and revision by the Curriculum Committee.

Course Work

A complete listing of the courses with descriptions can be found in the catalog and on the program website: *medschool. vanderbilt.edu/mgc/academics/timeline.*

Practica

Practicum experiences are an integral part of training genetic counseling professionals. Starting in the spring semester of the first year, students complete 50 weeks of practicum experience. Over ten 5-week blocks, students work with certified genetic counselors and Ph.D. and/or M.D. geneticists in the ABGCdefined practice areas of adult, cancer, pediatric, and prenatal. Experiences in specialty clinics and genetics laboratories are part of the practica. There is also opportunity to work in industry and philanthropic settings.

Thesis

Vanderbilt M.G.C. students are required to complete a research project during their 21-months of training. As part of this requirement, students are enrolled in a two-part course, Research for Genetic Counselors 1 (GC6610) and Research for Genetic Counselors 2 (GC6615), during the first year. These courses explore the research process, with a focus on articulating the value of research to the practice of genetic counseling. The courses introduce the research knowledge and skills students need to develop and complete their thesis research, including principles of study design, critical reading of the literature, developing a statistical plan, quantitative and qualitative research methods, collection and management of data, human subjects research and the IRB, the informed consent process, and research ethics. As topics are discussed in class, students apply what they have learned to the development of their theses.

More information about the research program is available online, at *medschool.vanderbilt.edu/MGC*.

Tuition, Fees, and Financial Aid

2019/2020

The following university costs are included with tuition:

- professional liability insurance
- student health service
- verifications

Academic Year 2019/2020 Tuition

Tuition, first and second year

\$40,000

The total estimated cost of attendance for a first-year student is \$75,279.

(See medschool.vanderbilt.edu/financial-services/ master-of-genetic-counseling-cost-of-attendance.)

Payment of Tuition and Fees

Please refer to the School of Medicine Tuition, Fees, and Financial Aid chapter of this catalog for more information about university costs and School of Medicine fees. Additional information can be found at *finance.vanderbilt.edu/stuaccts*.

Financial Aid

No program scholarship funds are provided to students enrolled in the Vanderbilt University Master of Genetic Counseling program. Vanderbilt University School of Medicine participates in the Federal Direct Student Loan Program. Prospective and admitted M.G.C. students may apply for federal loans to help support their attendance at Vanderbilt University. Information about federal loans and how to apply for them may be found on the VUSM Office of Student Financial Aid website.

Student Assessment

Grades

In addition to the School of Medicine policy found in the Academic Policies for All School of Medicine Programs chapter in the Student Assessment and Grading section, the M.G.C. program has the following numerical equivalents for letter grades:

A/A+	93-100
A-	90-92
B+	87-89
В	83-86
B-	80-82
С	75-79
F	74 and below

Courses in which a student earns less than a 'B-' do not count toward degree completion and must be repeated. While a student may obtain a 'B-' in an individual course, maintenance of at least a 'B' grade average overall is required to maintain satisfactory academic progress. Students can track their course work grades online through the course management system.

Practica Assessment

Successful completion of required practica are assessed by acquisition of clinical skills and collection of diverse and robust rotation experiences which satisfy ACGC and ABGC requirements. Clinical skill acquisition is assessed by the end of each five-week rotation block. Rotations experiences are tracked and managed through an on-line tracking system (see *medschool.vanderbilt.edu/mgc* for additional assessment detail and procedural guidance).

Competency Assessment

In accordance with ACGC Standards and Guidelines, students will gain skills and knowledge and will complete clinical cases required to be eligible for the ABGC genetic counseling board exam. Professional competencies set forth by the ABGC can be found at *abgc.net/for-diplomates/practice-standards*.

Research Progress Assessment

The thesis requirement is met by satisfying the criteria set forth by the Research Review Committee and the Academic Progress and Promotion Committee (APPC), below. Completion of the following goals demonstrates progress towards this requirement unless otherwise agreed by the APPC.

By the end of the following terms the student:

First year—Fall

Completes successfully the course Research for Genetic Counselors 1 (GC6610), including timely submission of all required assignments.

First year—Spring

Completes successfully the course Research for Genetic Counselors 2 (GC6615), including timely submission of all required assignments. This includes completion of thesis proposal and its approval after presenting it to the student's thesis committee.

Second year—Fall

Completes predetermined goals set jointly with the student's thesis committee by the end of the summer. These goals may include Institutional Review Board Approval, plan for data analysis, submission of first figure, and completion of an outline of manuscript.

Second year—Spring

- Submits to committee for approval a manuscript formatted for the target journal and
- Presents thesis to committee and other invited members of faculty.

Publication is encouraged, but not a gradation requirement.

Board Exams

Graduates of ACGC-accredited programs are eligible to apply for Active Candidate status from the ABGC and apply to sit for the certifying exam. Please visit *ABGC.net* for details regarding the certification exam.

Progress and Promotion

The M.G.C. program follows the School of Medicine policy in the Academic Policies for All School of Medicine Programs chapter in the Student Progress and Promotion section of this catalog. Additional program specific policy follows.

The M.G.C. program has a continuous process of student feedback and assessment, so that if a student's performance is below expectations this is identified early in the development of knowledge, skills, and attitudes in order to mitigate barriers to achieving mastery. The Academic Progress and Promotion Committee (APPC) is the main mechanism for this process and an ad hoc meeting can be convened if pressing issues arise.

Periodic Reviews

The academic progress of each M.G.C. student is reviewed by the M.G.C. APPC twice each academic year, once in the fall semester and once in the spring semester.

During each APPC meeting, one of the following promotion determinations is made for each student:

Satisfactory Progress

Student is determined to be maintaining satisfactory academic progress

• In spring term, decision to promote [1st year] or graduate [2nd year]

Satisfactory Progress with Formal Remediation

- Student is determined to be maintaining satisfactory academic progress, but requires remediation
- In spring term, establish contingencies to promote [1st year] or graduate [2nd year]

Probation with Formal Remediation

- Student is determined not to be maintaining satisfactory academic progress
- In spring term, establish contingencies to remove probation and to promote [1st year] or graduate [2nd year]

Dismissal

- Recommendation of student dismissal from the program is made to the dean of the School of Medicine
- Dismissal follows a period of academic probation if the student does not return to making satisfactory academic progress through prescribed remediation.

Satisfactory Academic Progress and Good Standing

M.G.C. students must maintain satisfactory academic progress in all program learning activities (course work, thesis, and clinical experiences) at all times.

In order to be promoted and to graduate, students must maintain the following satisfactory academic progress standards:

Course work: 'B' or above grade average While a student may obtain a 'B-' in an individual course, maintenance of at least a 'B' grade average overall is required to maintain satisfactory academic progress. Thesis development: Expectations of progress met Clinical skills: Progress in ascertainment of clinical skills/ competencies

In addition any unexcused absence(s) during a term are considered as part of the promotion review process and may negatively affect student academic progress and promotion or commencement.

Students are notified in writing of any APPC determination that is not satisfactory progress, and the terms of the decision is documented. The decision is also reviewed biannually in the student's meeting with the program director.

The M.G.C. program student support and advisory systems work collaboratively with students on remediation plans and to facilitate students' access to resources to assist the student in returning to satisfactory academic progress status.

Graduation

Promotion Committee Endorsement

In the spring term, the APPC is charged with making recommendations to the program director regarding progress, promotion, or graduation of students.

Allowance for Delaying Graduation

If an individual requires additional time due to unusual circumstances (e.g., remediation, personal leave of absence), a

student may, with approval of the M.G.C. program director, take up to three years to complete the degree.

Program Commencement

Degrees are granted by the university in May, August, and December. Those students who wish to "walk" but did not complete all degree requirements by May of that year are permitted to walk during the School of Medicine Commencement of the following year.

Formal Remediation and Probation

The M.G.C. Academic Progress and Promotion Committee may require a student to engage in a process of formal remediation in order to return to making satisfactory academic progress.

Formal Remediation Plan

In such cases, the student works with the M.G.C. program director to develop an individualized plan and timeline for remediation. Others who may provide input into or participate in the development and implementation of a student's remediation include the M.G.C. practicum coordinator, the APPC, the student's academic adviser and research adviser.

The formal remediation process is intended to be supportive of struggling students, not punitive. Depending on the nature of the academic challenges cited by the APPC, a plan for remediation might include, but is not limited to:

- Completion (or re-completion) of past assignments,
- Completion of additional assignments,
- Clinical cases with specific indications, or
- Other clinical experiences.

Documentation related to the APPC determination (including noted performance deficiencies), the remediation plan, and the outcome of remediation are documented in the student's file.

Probation

Students who do not successfully complete formal remediation, as required by the M.G.C. Academic Progress and Promotion Committee, may be placed on probation. Students placed on probation by the APPC are notified through a letter from the program director that outlines the reasons for the probation, the requirements and recommendations for addressing deficiencies, conditions for removal of probation, expected time frame, and actions that are taken if conditions are not met. Students placed on probation for any reason are required to complete a specific remediation plan that has been approved by the program director and the APPC. The remediation plan may include requirements placed on the student, such as regular meetings with advisers, elimination of extracurricular activities that may be interfering with satisfactory academic progress, etc.

All students on probation are reviewed by the program director and the APPC at least once each semester to determine whether satisfactory academic progress has been made. At that time the program director and the APPC may take the following actions:

Remove probation

Probation may be removed if the student has adequately addressed deficiencies, even if this is before the designated time frame cited in the remediation plan.

Continue probation

Progress is being made.

Recommend dismissal

Performance continues to be unsatisfactory. Written notification is provided to the student regarding the outcome of this review. Probation is considered an adverse action and may be reported in future graduation verifications and other requests for information.

Dismissal

Dismissal for unsatisfactory academic progress takes place only after a student has been given a reasonable probationary period to address deficiencies. For the master of genetic counseling, this reasonable period usually consists of one academic term. The M.G.C. program follows School of Medicine policy for formal remediation, probation, dismissal, and appeals. See the Academic Policies for All School of Medicine Programs chapter of this catalog for more information on these topics.

Eligibility to Reapply

Students dismissed from the program for academic reasons may re-apply through the GC National Match process.

Student Support and Advisory Services

Academic and Career Advisory Resources

The goal of the Vanderbilt M.G.C. Advising Program is to support students in achieving their maximum educational potential while fostering professional development and clinical competency.

Objectives

- To enhance open lines of communication between students and the program director, administration, and faculty.
- To provide the student an adviser with whom they can discuss academic questions, progress, concerns, etc.
- To enhance professional development.
- To address issues in a constructive manner.

Advisers work with students to:

- Promote student growth and development.
- Assist students in assessing their interests and abilities, examine their educational goals, decision making, and developing short- and long-term plans to meet their objectives.
- Discuss and clarify educational, career, and life goals.
- Provide accurate and timely information and interpret professional, institutional, and program education requirements.
- Aid in understanding the educational context within which the student is enrolled.
- Advise on the selection of appropriate courses and other educational experiences.
- Clarify institutional and program policies and procedures.
- Evaluate and monitor student academic program and achievement of goals.
- Reinforce student self-direction and self-sufficiency.

- Identify appropriate resources relating to educational, career, personal concerns, or skill/learning deficiencies when necessary.
- Identify educational, institutional, and community resources (e.g., internships, scholarships, etc.).
- Collect and distribute relevant data about student needs, preferences, and performance for use in program decisions and policy.

*Modified from the Council for Advancement of Standards in Higher Education *www.cas.edu*

Approach

The M.G.C. Advising Program uses a combined prescriptive and developmental approach. A prescriptive approach is utilized to ensure students enroll in all required courses. A developmental approach is utilized to help promote student growth and professional development. The following tenets are assumed:

- The individual student must be considered as a whole.
- Each student is a unique person and must be treated as such.
- The total environment of the student is educational and must be used to help the student achieve full development.
- The major responsibility for a student's personal and social development rests with the student and his/her personal resources.

Logistics

Students are matched with an academic adviser who guides and monitors their progress throughout their time in the M.G.C. program. Advisers keep documentation of meetings with students. Summary of all meetings are kept in the student's file.

Adviser Responsibilities

- To meet with student as recommended/requested and no less than prior to each APPC meeting
- To listen to student concerns
- To provide constructive feedback
- To assist in finding on- and off-campus resources for academic success (e.g., tutoring, counseling, etc.)
- To communicate student concerns or concerns regarding the student to program director or appropriate program administration
- Present student progress to Academic Progress and Promotion Committee for review

Student Responsibilities

- To meet with adviser as recommended/requested and no less than prior to each APPC meeting
- To keep adviser informed of academic performance and potential problems
- To discuss with adviser any issues with clinical rotations, supervisors, etc.
- To keep adviser informed of thesis progress

Schedule for Adviser Meetings

Advisers and students are required to meet at least once each term. Meetings are required near the end of the term so that information from the meetings can be included in promotion committee discussions (promotion committee meetings take place in all terms except summer).

Recommended Schedule:

- First Year—Fall: Introductions and goal-setting meeting (during weeks 1–2)
- First Year—Fall: Mid- to late-semester advising meeting
- First Year—Spring:: Mid- to late-semester advising meeting
 End of First Year—Summer: Review of clinical and
- End of First Year—Summer: Review of clinical and research milestones/progress
- Second Year—Fall: Mid- to late-semester advising meeting
- Second Year—Spring: Early- to mid-semester advising meeting (at least 3 months prior to graduation, to ensure student is on track for on-time graduation)
- Second Year—Spring: Career advising, as needed

Advising meetings may happen as frequently as advisers and students feel appropriate to address student needs. Students may also meet with other members of the program leadership as appropriate to the need.

Health and Wellness

In addition to the Student Care Network and other useful student resources found in the Life at Vanderbilt chapter of this catalog, M.G.C. faculty members and those in the program leadership are available as resources to students to discuss challenges related to work-life balance and other stressors that can accompany launching a new career, as well as life in general. Faculty members are trained during their faculty orientation about the limits to this professional role and how to recognize when students may be in need of more specialized resources, such as those provided through VU student health or the Title IX office. Faculty members are also trained to make referrals to available resources, whether doing so directly or by providing resources to students who wish to self-refer.

The M.G.C. program director is available at all times to consult with faculty members who have concerns regarding a student's well-being. By the same token, members of the Vanderbilt University School of Medicine administration, including the assistant dean for health sciences education and the senior associate dean for health sciences education, are available to the program director to consult on questions that may arise regarding student welfare.

Conflicting Faculty Roles

The M.G.C. program Educator Role Matrix (*http://vanderbi.lt/mgcrolematrix*) demonstrates faculty/administration dual roles that can lead to potential conflicts of interest. Incompatible roles are avoided, if at all possible, when assigning advisers. Roles for potential conflict should be mitigated with an action plan.

Other Program Policies

Program Evaluation

Note: The term "evaluation" is used to refer to the measurement of effectiveness of the curriculum, including courses and other learning activities, as well as M.G.C. program faculty and administrators, not individual student performance.

The purpose of evaluation at Vanderbilt University School of Medicine M.G.C. program is to provide timely information

that can be used to determine the effectiveness of the M.G.C. curriculum and teaching. The evaluation ultimately measures whether the program is accomplishing its mission. The evaluation process supports continuous improvement of all program components.

Curriculum and teaching improvement is a community effort. All M.G.C. students, faculty, and staff have a role in identifying needs and implementing strategies for improvement. For that reason, every M.G.C. student is required to complete each M.G.C. curriculum, program and faculty/ administrator evaluation survey.

The M.G.C. leadership and committee chairs, with guidance from the M.G.C. Advisory Board, broadly oversee the system of program and faculty evaluation. However, it is important to the program that students are included in the review, synthesis and discussion of evaluation data, as well as the development of program changes that result from that data. Therefore, a recent graduate (once the program graduates a class) and at least one currently enrolled student are part of the evaluation team. Student representatives discuss program outcomes with their student colleagues, provide reports and interpretations, and make recommendations for improvement.

Types of Evaluations

Program evaluation examines the impact of overall curriculum and the interaction of its components and the learning environment on student learning. (Additional detail and procedural information can be found on the Program website/ gateway at) At VUSM, program evaluation activities include but are not limited to:

• *Course evaluations.* These evaluations are completed by all students for each course. Course evaluations cover important course quality indicators, including level of difficulty, course structure/organization, instructor effectiveness, text quality and give the student an opportunity to provide an overall course rating.

• *Rotation evaluations*. These evaluations are completed by all students for each rotation. Rotation evaluations allow students to provide meaningful feedback pertaining to the quality of supervision and mentorship they received at the rotation site. This feedback allows M.G.C. program administrators the opportunity to assess the quality of training sites and to develop targeted training for site supervisors and mentors.

• Overall program evaluations (surveys). These surveys and focus groups are used to gather data regarding evaluation of the overall program. Students, faculty, leadership, alumni and employers are asked to complete these evaluation tools.

• Faculty and administrator evaluations. These evaluations are conducted by all key program personnel, including the program leadership and primary instructional faculty/course directors. Feedback from faculty is elicited on how Program Leadership can better support instructional faculty. Leadership receives feedback on their delineated job responsibilities from students and faculty. Students provide feedback via exit survey and alumni survey. Program faculty, course directors, and clinical supervisors have the opportunity to provide feedback about Program Leadership annually on an anonymous survey.

• *Focus groups.* The Center for Teaching conducts focus groups of the students and faculty as needed by the program to evaluate if program is meeting the mission, goals and strategic plan. This approach is used as part of the end of year program evaluation. In the first few years of the program the focus groups are conducted at the end of the first semester for

more rapid cycle review and implementation of improvements. More informally the program director meets with the students monthly to hear any concern or suggestions.

• Data from student assessments. Student performance in courses is used to assess curriculum and the program annually. In addition the American Board of Genetic Counselors reports aggregate data to the program regarding alumni's performance on the certifying exam. The overall scores and the breakdown of performance of alumni in the different domains and competencies are reviewed by the Curriculum Committee. These data factor into the program and curriculum evaluation process.

• Evaluation data and the Program Improvement Process. Data from the above describe evaluations are compiled annually by the program coordinator under the direction of the program director.

Data are distributed for review. Responsible individuals and/or committees summarize data. Areas of improvement are addressed with action plans and measurable goals to assess progress toward improvement.

Leave of Absence

A student may request a leave of absence (LOA) from school for any reason (personal, medical, etc.). All LOAs must be approved by the M.G.C. program director. A student wishing to request an LOA should make an appointment to speak with the M.G.C. program director about the request (unless an emergency LOA). Following that meeting the student is required to submit a written request to the M.G.C. program director, outlining the nature of the requested leave and providing the starting and ending dates. Students may consult with Vanderbilt University Student Access Services (vanderbilt. edu/student-access/) when contemplating a leave of absence, and program administrators may consult with student access services when evaluating a request for leave of absence.

The program director may grant the student a leave of absence for up to one year as long as the student is in good academic standing. Prior to leave, a plan for re-entry into the curriculum and meeting requirements for graduation should be outlined with the program director, with the assistance of the student's adviser, as needed.

Students who are not in good academic standing may request a leave of absence using the request procedure described above, but approval of the leave may be granted only by the M.G.C. Academic Progress and Promotion Committee. The request is presented to the APPC by the M.G.C. program director.

Attendance and Leave

Attendance is required at all M.G.C. program activities unless prior approval for absence is provided by a course instructor or clinical supervisor (for single session absences) or the M.G.C. program director (for multiple-session or multiple-day absences).

Classroom Attendance Policy

Students are required to attend all class sessions, but the course instructor may choose to make an exception for a student with extenuating circumstances. The student must contact the instructor to request an exception before the anticipated absence. The following guidelines may be used by

M.G.C. faculty to guide decisions about approving absences from classroom sessions:

- 4 credit hour courses: 1-2 absences may be permitted (only with prior instructor notification and approval)
- 3 credit hour courses: 1-2 absences may be permitted (only with prior instructor notification and approval)
- 2 credit hour courses: 1 absence may be permitted (only with prior instructor notification and approval)
- 1 credit hour courses: For courses that meet 4-6 times during a semester, attendance is required in every class (unless specific arrangements have been made in advance of enrolling in the course).

Clinical Rotation Attendance Policy

Each student is expected to attend clinical learning opportunities, in each rotation, on designated days as scheduled. Clinics generally operate Monday through Friday with specific dates/ times designated. Due to clinic start times, this may mean arriving to clinic prior to 8:00 a.m. and occasionally not leaving until after 5:00 p.m., to ensure that all clinic preparation and assignments have been completed. Students are expected to maintain regular contact with rotation supervisors to be aware of any changes to the clinical schedule.

Procedures for Requesting Absences

Planned Absences

Students who anticipate being absent for more than one class or clinical session are required to email a request to the M.G.C. program director in advance outlining the need for the absence. In these circumstances, students are responsible for notifying their instructors (classroom and clinical) in advance about their planned absence, and they are responsible for making arrangements to make up any work missed during the absence. Please see student gateway (*medschool.vanderbilt.edu/mgc*) for more information.

Emergency Absences

In the case of an emergency absence (i.e., illness, emergency, death in family), the student is required to contact the M.G.C. program director as soon as the student becomes aware of the need to be absent. The program director contacts the student's course instructors and/or clinical supervisors. If the absence extends beyond one day, the student must keep the program director updated regarding the anticipated duration of time away. Any absence due to illness greater than three days requires a doctor's note, to be provided to the Program Director.

Students should not attend any program activities, including lectures/student laboratory and clinical practica if they experience any of the following:

- Vomiting
- Diarrhea
- Fever greater than 101 degrees F
- Diagnosis of a communicable illness

Upon returning from an emergency absence, students are responsible for completing all work and/or assignments missed during the absence, as required the instructor/supervisor. This may require the student to arrive early or stay late in order to make up missed work.

Unexcused Absences

All absences from mandatory sessions that are not excused (using processes above for planned and emergency absences) are considered unexcused absences. Unexcused absences are unacceptable and may have a negative effect on the student's overall academic progress through the program. All sessions/ educational activities are mandatory unless otherwise indicated in the course syllabus/clinical expectations materials. Please contact the course or program director with any questions.

Make-Up Policy

Each M.G.C. program course director is responsible for establishing policies concerning make-up policies. Any such policies, including points for attendance and/or participation, penalties for absences, limits on excused absences, total allowable absences, etc., are specified in the course syllabus provided to students at the beginning of the course term.

Weather Policy

It is very rare for VUSM educational activities to be cancelled for weather-related reasons. However, there are days in which the weather is severe and dangerous for travel. If VU classes are cancelled by the chancellor, M.G.C. students and faculty receive an email from the M.G.C. program director with instructions.

A SIRE Catalo Safety is our primary concern. Winter weather may make road conditions unsafe, even if classes are not cancelled by the university. In this situation, students are urged to use their best judgment about commuting in inclement weather. If a student is unable to get to campus due to weather conditions, he or she should notify the course instructor/clinical supervisor prior to class or clinical session, and make arrangements with the instructor to make up any missed work.

Faculty members may cancel class sessions if they feel that it is appropriate. The M.G.C. program assists faculty in scheduling make-up classes for all canceled class sessions.

Student Work Policy

Vanderbilt University Master of Genetic Counseling program students are not offered paid employment opportunities as a function of their student enrollment. However, enrolled students have access to resources available through Vanderbilt University Student Employment, More information is available at vanderbilt.edu/studentemployment/. It is recommended that students not work more than ten hours a week during academic terms.

Transportation

Students are required to attend all classes in person. Should the program offer off-site rotations in the future, then consideration is given to permitting students to use video conferencing services to participate in specified second-year classes.

Master of Laboratory Investigation

The mission of the Master of Laboratory Investigation program is to enhance the academic, scientific, and technical expertise of research personnel who continue to work in a research environment; to foster their professional growth; and to improve the career potential of the brightest and most qualified researchers who do not wish to pursue a Ph.D.

The Master of Laboratory Investigation program is offered by the School of Medicine for Vanderbilt University, Vanderbilt University Medical Center, and Meharry staff members. Applicants should have B.S. or B.A. from an accredited institution with a GPA of 2.5 or higher, have at least six months of employment at VU, VUMC, or Meharry in a research laboratory, and be nominated with a strong letter of support from the faculty mentor in whose lab they work. The Graduate Record Examination (no minimum mandatory score) and an interview are required of all applicants.

Please visit our website at *medschool.vanderbilt.edu/mli/* for additional information.

Degree Requirements

- Candidates for the M.L.I. degree program are required to complete thirty-six semester credit hours. Because it is a program for working professionals, no more than twelve hours may be taken in an academic year, unless prior approval is granted by the program director. Entering students are required to complete the Responsible Conduct of Research course. Students may earn a maximum of 6 semester credit hours for Interdisciplinary Graduate Program bioregulation modules. Each student selects a program track during his or her course of study.
- 1) Research Track: Students who choose this track develop a research project under the direction of a mentor and they must register for twelve semester hours of research. Note: Only research conducted outside of one's job requirements is considered for research credit. In lieu of a formal thesis, a graduate student may prepare a manuscript that is suitable for publication. Although it is highly desirable that the manuscript be published, publication of the manuscript is not a graduation requirement.
- 2) Modified Research Track: Students who pursue this track are expected to present their research to a formal audience, which may include a conference gathering or poster presentation at Vanderbilt University. This track requires six to ten semester hours of research and two to four hours of technique training modules. Note: Only research conducted outside of one's job requirements is considered for research credit.
- The normal time for completion of graduation requirements for the M.L.I. is three years. The maximum time for completion of degree requirements is five years.
- Students are required to assemble a committee of faculty members to direct their research and selection of course work and technique modules throughout the degree program. A committee includes a minimum of three faculty members, one of whom is the student's mentor. Committee approval of satisfactory progress is required each semester.

Tuition, Fees, and Financial Aid

2019/2020

The following university costs are included with tuition:

- professional liability insurance
- student health service
- verifications

Academic Year 2019/2020 Tuition

Tuition (12 hours at \$1,598 per credit hour)

\$19,176

Payment of Tuition and Fees

Please refer to the School of Medicine Tuition, Fees and Financial Aid chapter of this catalog for more information about university costs and School of Medicine fees. Additional information can be found at *finance.vanderbilt.edu/stuaccts*.

Master of Public Health

Program Overview

The Master of Public Health (M.P.H.) is an interdisciplinary program designed to train research scientists and public health professionals to be leaders and innovators dedicated to improving public health. The program is accredited by the Council on Education for Public Health.

The M.P.H. program allows students from all academic and professional backgrounds, as well as clinical specialties, to customize their public health education and integrate their specific research and career interests with the support of committed faculty mentors.

As part of their application, students choose one area of concentration for their studies from among the program's three tracks (epidemiology, global health and health policy).

Additional information about the M.P.H. program can be found at *medschool.vanderbilt.edu/mph*.

Program Mission/Goals/Objectives

Mission

The mission of the M.P.H. program is to train future research scientists and public health professionals to be leaders and innovators dedicated to improving public health in a program environment rich in learning, discovery, and service.

Goals and Objectives

To fulfill its mission, the M.P.H. program has the following goals and objectives:

- 1. Educate innovative and effective public health researchers, educators, and practitioners
 - Recruit culturally diverse students who will make substantial contributions to public health
 - Engage students with interdisciplinary faculty who demonstrate commitment to educating and mentoring future public health leaders
 - Facilitate active learning through classroom and experiential training opportunities
- 2. Advance knowledge in the public health sciences through research and discovery
 - Contribute to the public health scientific evidence base
 - Engage in collaborative and interdisciplinary research
 - Compete successfully for funding in the public health sciences
- 3. Participate in development and implementation of public health programs and policies
 - Build and foster community partnerships that bridge public health science and practice
 - Engage in collaborations, including research, training, and service activities, with governmental agencies and community partners in the U.S. and abroad
 - Disseminate public health knowledge and promote implementation of effective public health policies and practices

Program Accreditation

The Master of Public Health program is accredited by the Council on Education for Public Health (*CEPH.org*), 1010 Wayne Avenue, Suite 220, Silver Spring, MD 20910.

Standing Program Committees

Admission and Promotion Committee

The Admission and Promotion Committee monitors student progress toward completing the M.P.H. degree requirements and makes recommendations to the program regarding promotion, remedial action, or dismissal as appropriate for each student.

This committee also has the responsibility of making recommendations concerning admission and scholarships for applicants to the M.P.H. program. The committee oversees and continually reviews the admission process. It typically meets four to six times per academic year.

Admission and Promotion Committee members for academic year 2019/20: Kecia Carroll, Marie Griffin, Bill Heerman, Marie Martin, Christianne Roumie, Annie Smart, David Stevenson.

Advisory Committee

The Advisory Committee provides oversight of the evaluation and planning efforts for the program, including review of attainment of stated goals and objectives. The committee facilitates the long-range planning efforts of the program and provides other guidance to the program as requested. It explores ways to strengthen ties to key constituencies, including public health practitioners, public health researchers, students, alumni, and faculty. The Advisory Committee meets once per year and more often as needed.

Advisory Committee members for academic year 2019/20: Donald Brady, Melinda Buntin, Kecia Carroll, William Cooper, Allen Craig, Jennifer Erves, Gilbert Gonzales, Marie Griffin, Bill Heerman, Doug Heimburger, Tim Jones, Sarah Mansouri, Marie Martin, Melissa McPheeters, Leslie Meehan, Juanita Prieto Garcia, Elizabeth Rose, Christianne Roumie, William Schaffner, Jason Stamm, David Stevenson, Ed Vasilevskis.

Curriculum Committee

The Curriculum Committee is charged with providing oversight of M.P.H. program curriculum and related instruction consistent with the program's mission, goals, objectives, and values and appropriate for demonstrated professional competencies as identified by the program. The committee monitors and, as needed, makes recommendations regarding courses offered within the program for relevance of learning objectives, appropriateness of procedures for assessing student competencies, and quality of faculty and student performance within courses. The committee meets three times per academic year.

Curriculum Committee members for academic year 2019/20: Rachel Apple, Beto Arriola Vigo, James Barclay, Evan Buter, James Carlucci, Kate Clouse, Keerti Dantuluri, Gretchen Edwards, Djamila Ghafuri, John Graves, Marie Griffin, Hannah Griffith, Arlyn Horn, Laura Keohane, Justin Liberman, Tamee Livermont, Alex Luu, Adoma Manful, Marie Martin, Kelsey Minix, Kelly Moore, Sylvie Muhimpundu, Meghana Parikh, Sarah Rachal, JW Randolph, Jennifer Robles, Christianne Roumie, Emmanuel Sackey, Cassie Smith, David Stevenson.

Diversity Committee

The Diversity Committee provides oversight for M.P.H. program inclusion and diversity efforts. The program considers diversity to represent a broad range of individual characteristics consistent with Vanderbilt University policies, including diversity in race, sex, religion, color, national or ethnic origin, age, disability, military service, sexual orientation, gender identity, and gender expression.

The committee monitors and, as needed, makes recommendations regarding the inclusion and diversity of students, faculty, and staff to increase ways in which the public health workforce reflects the populations that we serve. The committee also provides recommendations for strategies to provide diverse perspectives in the program's curricular offerings and to provide students with insight into particular issues that underrepresented and/or disadvantaged groups face.

Diversity Committee members for academic year 2019/20: KeciaCarroll, André Churchwell, Carleigh Frazier, Gilbert Gonzales, Tamee Livermont, Rebecca Mohr, Muna Muday, Mina Nordness, Rany Octario, Juanita Prieto Garcia, Emmanuel Sackey, Victoria Umutoni, Jasmine Walker, Ni Ketut Wilmayani.

Program's Major Facilities

The M.P.H. program office and classroom are located on the second level of the Village at Vanderbilt building, 1500 21st Avenue South. The office is in Suite 2100, and the classroom is in room 2600.

Admission

Admission Requirements

Eligible candidates include those with bachelor's, master's, or doctoral degrees. At least two years of relevant, post-undergraduate professional experience is strongly preferred, but is not required.

Application Process

Applications are submitted through SOPHAS (*sophas.org*), the centralized application for programs of public health. The SOPHAS application requirements for the M.P.H. program at Vanderbilt University are listed below:

- Current curriculum vitae or resume
- Three letters of recommendation
- Statement of purpose and objectives
- Official transcripts for all prior academic degrees and postsecondary course work
- Official standardized test score reports:

o GRE or MCAT scores are required for all applicants; this requirement is waived for applicants who have graduated from or are currently enrolled in a doctoral degree program (or equivalent). Examples of doctoral degrees and equivalents include: Ph.D., M.D., D.O., Pharm.D., D.V.M., M.B.Ch.B., M.B.B.S., etc. o TOEFL scores are required for international applicants; this requirement is waived for applicants who have received an academic degree from an institution where English was the language of instruction.

Interviews are not required as part of the application process. To view application deadlines and additional information about the admission process, please visit *medschool.vanderbilt*. *edu/mph/admissions*.

Selection Criteria, Offer, and Acceptance

The Admissions Committee evaluates the application materials and decides which applicants are invited to join the entering class. The program seeks applicants with strong academic backgrounds and clear public health goals. Applicants should be able to articulate how the Vanderbilt M.P.H. relates to their career aspirations.

Admission notifications and offers of program scholarship funding are sent to applicants by email in the spring. Admitted applicants are asked to confirm their intention to matriculate no later than April 15.

A criminal background check is required and must be completed over the summer, before matriculation. Additional information about the background check and other new student requirements is sent by email during the summer.

Transfer Credits

Up to 15 academic credit hours of prior graduate-level course work from other schools at Vanderbilt or other accredited universities may be applied to the required 42 credit hours needed for the degree, conditional upon the approval of the Admission Committee and the relevant course directors. Only those courses for which a student has received a grade of B or its equivalent will be considered for incoming credit transfer.

Students in the M.P.H. program may audit courses offered by other departments and programs with the approval of the course instructor.

Non-degree-seeking Students

Non-degree-seeking students may take courses in the M.P.H. program as long as they meet the program's admission requirements (i.e., completion of bachelor's, master's, or doctoral degree). Registration in a course is contingent upon completion of any course prerequisites, instructor approval, M.P.H. program approval, and space in the class. Tuition is charged according to the number of credit hours taken. A onetime transcript fee (\$100) may apply for first-time Vanderbilt University students. Auditing is not permitted in M.P.H. program courses.

Degree Requirements

Requirements to Earn Degree

Candidates for the M.P.H. degree must complete 42 academic credit hours of course work over five academic terms. The 42 credit hours include core and track-specific courses, as well as courses associated with the public health practicum and thesis. Satisfactory completion of the public health practicum, an interprofessional education activity, and the thesis is required for all students.

Length and Delivery of Program

The M.P.H. program is a full-time, two-year (five terms) degree program The normal time to complete the M.P.H. is two academic years. The maximum time allowed to complete the degree is four years, unless there are unusual circumstances which merit an extension of this limit.

M.P.H. Program Competencies and Curriculum

The M.P.H. program has established a list of competencies that align with those required for accreditation by the Council on Education for Public Health. Students demonstrate competencies through course work and other degree requirements.

Foundational Competencies

Evidence-based Approaches to Public Health

- 1. Apply epidemiological methods to the breadth of settings and situations in public health practice.
- 2. Select quantitative and qualitative data collection methods appropriate for a given public health context.
- 3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate.
- 4. Interpret results of data analysis for public health research, policy, or practice.

Public Health and Health Care Systems

- 5. Compare the organization, structure, and function of health care, public health, and regulatory systems across national and international settings.
- 6. Discuss the means by which structural bias, social inequities, and racism undermine health and create challenges to achieving health equity at organizational, community, and societal levels.

Planning and Management to Promote Health

- 7. Assess population needs, assets, and capacities that affect communities' health.
- 8. Apply awareness of cultural values and practices to the design or implementation of public health policies or programs.
- 9. Design a population-based policy, program, project, or intervention.
- 10. Explain basic principles and tools of budget and resource management.
- 11. Select methods to evaluate public health programs.

Policy in Public Health

- 12. Discuss multiple dimensions of the policy-making process, including the roles of ethics and evidence.
- 13. Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes.
- 14. Advocate for political, social, or economic policies and programs that will improve health in diverse populations.
- 15. Evaluate policies for their impact on public health and health equity.

Leadership

16. Apply principles of leadership, governance, and management, which include creating a vision, empowering others, fostering collaboration, and guiding decision making. 17. Apply negotiation and mediation skills to address organizational or community challenges.

Communication

- 18. Select communication strategies for different audiences and sectors.
- 19. Communicate audience-appropriate public health content, both in writing and through oral presentation.
- 20. Describe the importance of cultural competence in communicating public health content.

Interprofessional Practice

21. Perform effectively on interprofessional teams.

Systems Thinking

22. Apply systems thinking tools to a public health issue.

Track-specific Competencies

Epidemiology Track

- Identify the major study designs for population-based research: randomized controlled trial, cohort, case-control, nested case-control, cross-sectional, and ecological/instrumental variable (including Mendelian randomization). Understand the strengths and weaknesses of each and the circumstances in which each is the preferred approach to addressing important health-related knowledge gaps.
- 2. Understand the steps necessary to conduct observational studies, including definition of the study population, measurement of exposure, disease and other variables, misclassification and its effect on study findings, measurements of occurrence and association, and confounding and its management.
- 3. Demonstrate proper application of principles for building of multivariable regression models, and how to make inferences from these models.
- 4. Perform regression diagnostics, including residual analyses to assess how well models fit the data, inspect the presence of outliers, and assess the fulfillment of model assumptions.
- 5. Understand the ethical foundation for research regulations and their principles as applied to human subjects research, including autonomy, beneficence, and justice.

Global Health Track

- 1. Identify historical and emerging issues of significance in global health from an interdisciplinary vantage point.
- 2. Demonstrate knowledge of research methodologies and programmatic interventions used to ameliorate health and developmental problems, particularly in low-resource settings.
- 3. Describe fundamentals of organizational behavior and change, particularly in low-resource settings. (VU GH3). Recognize the role of policy development and advocacy in global health.
- 4. Demonstrate cultural competence and promote diversity in global health research, policy and practice. (VU GH5).

Health Policy Track

- 1. Identify the main features and challenges related to the financing, incentives, and delivery of health care services and public health systems in the United States.
- 2. Describe the complementary roles of individualized health care services and population-based interventions in main-taining and improving health status.
- 3. Evaluate policies and apply theories of health insurance and the incentives that various approaches to coverage and provider payment create in the health system.
- 4. Analyze the impact of changes in public health policy and health care financing and service delivery on health care cost growth, quality of care, and access to services.
- 5. Conceptualize the data and research methods necessary to address questions of significance to policymakers and other relevant system actors.

Public Health Practicum

All students in the M.P.H. program complete a public health practicum. The public health practicum is a supervised practical field experience designed to provide students the opportunity to develop and apply the knowledge and skills acquired in the academic program in a public health agency or other environment in which a public health function is performed. Students work with the practicum director on an individual basis to identify, arrange, and complete a satisfactory field experience that fulfills the program's practicum requirements. Additional information about the Public Health Practicum can be found at *medschool. vanderbilt.edu/mph/academics/practicum*.

Interprofessional Education

Interprofessional Education (IPE) is an integral part of public health and a required component of the M.P.H. program. The IPE requirement is composed of a didactic foundation, which is delivered as part of PUBH 5516 Public Health Practice, as well as a practical experience. For the practical experience, students participate in an interprofessional activity. Students may select an IPE activity from a list of pre-approved options, or they may propose their own.

Thesis

The thesis is a substantive and original body of work that allows students to synthesize and integrate knowledge from their public health course work and practicum experiences, apply it to a particular topic area, and communicate their ideas and findings through a scholarly written product. The thesis represents the culmination of the student's educational experience in the M.P.H. program.

The thesis may take on different formats, depending on the student's track focus and interests. Regardless of the format chosen, the student must apply critical thought, systematic analysis, and clear presentation. Additional information about the thesis can be found at *medschool.vanderbilt.edu/mph/academics/thesis*.

Course List

A full list of program courses is provided in this catalog under "Courses of Study."

Tuition, Fees, and Financial Aid

2019/2020

The following university costs are included with tuition:

- student health service
- criminal background check

Academic Year 2019/2020 Tuition

Tuition, 1st year	\$37,700
Tuition, 2nd year	18,850
Special, Non-Degree Seeking (per credit hour)	1,567

Estimated Cost of Attendance. The total estimated cost of attendance is an amount established by the School of Medicine's Office of Student Financial Aid as reasonable costs for attending the program. The estimated cost of attendance is used in calculations to determine the amount of financial aid for which a student may be eligible. It includes direct costs such as tuition and the student services fee, as well as indirect costs. The indirect costs are grouped into the following categories: books/supplies, rent/utilities, meals, personal (including the student health insurance fee and transcript fee), transportation, and loan fees for prior degrees. It is expected that most students can live within these costs. The actual cost of attendance for each student will vary depending on the individual's specific needs and preferences.

The total estimated cost of attendance for a first-year student is \$72,979; for a second-year student, the cost of attendance is \$45,564.

(See medschool.vanderbilt.edu/financial-services/ master-of-public-health-cost-of-attendance.)

Payment of Tuition and Fees

Please refer to the School of Medicine Tuition, Fees and Financial Aid chapter of this catalog for more information about university costs and School of Medicine fees. Additional information can be found at *finance.vanderbilt.edu/stuaccts*.

Student Assessment

Student performance is assessed in every course and program requirement. Efforts are made by program faculty to bring any significant performance concern during a required course to the attention of the student early enough to allow sufficient time to develop a remediation plan. A student for whom major concern persists despite coaching may be given a failing grade (F) for the course and/or may not be promoted despite satisfactory performance in other courses. Course requirements and grading information are detailed in the course syllabus.

Grades

The M.P.H. program uses the VUSM grading scale, presented in the chapter of this catalog titled Academic Policies for All School of Medicine Programs.

Progress and Promotion

Periodic Reviews

Each student meets with their academic adviser twice per year. Academic advising meetings provide the opportunity to discuss course selection, progress toward meeting the degree requirements, and any academic challenges and how they may be addressed. Additional meetings may take place as needed at the student or adviser's request.

Satisfactory Academic Progress and Good Standing

A cumulative grade point average of at least 3.0 is required for graduation. A semester average of at least 3.0 is required to remain in good academic standing. A student whose cumulative grade point average falls below 3.0 may be placed on probation for one semester. If at the end of the semester the grade point average is still below 3.0, the student may be dismissed from the program based on unsatisfactory academic performance. Students may withdraw in lieu of dismissal.

Repeating a Course

Students who receive a final course grade of C+ or lower may be required to retake the course or complete additional course requirements before progressing in the program.

Graduation

Promotion Committee Endorsement

In the spring term, the Admission and Promotion Committee is charged with making recommendations to the program director regarding progress, promotion, or graduation of students.

Allowance for Delaying Graduation

Students who need more than two years to complete the M.P.H. degree requirements may propose a revised degree completion plan. This plan should include a term-by-term list of completed, in progress, and anticipated degree requirements, along with a reasonable timeline for completing the degree requirements. The revised degree completion plan must be approved by the track director and program director, in writing. For incomplete courses, the relevant course director's written approval is also required.

Program Commencement

The university holds its annual Commencement ceremony following the spring semester. Degree candidates must have completed successfully all curriculum requirements by the published deadlines to be allowed to participate in the ceremony. A student completing degree requirements in a summer or fall semester may participate in Commencement the following May, and ordinarily the degree will be conferred at the end of the term in which requirements are completed. Any student unable to participate in a Commencement ceremony will receive his or her diploma by mail.

Formal Remediation and Probation

Probation

A student may be placed on academic probation if the student's cumulative grade point average falls below 3.0, or their course grades include any failures. If at the end of the semester of academic probation the grade point average is still below 3.0, the student may be dismissed from the program based on unsatisfactory academic performance.

Students placed on probation are notified through a letter from the program director that outlines the reasons for the probation; the requirements and recommendations for addressing deficiencies; the conditions for removal of probation, including an expected time frame; and actions that will be taken if conditions are not met.

Students placed on probation for any reason will be required to complete a specific remediation plan that has been approved by the track director and program director. The remediation plan may include requirements of the student, such as regular meetings with advisers, elimination of extracurricular activities that may be interfering with satisfactory academic progress, etc.

All students on probation will be reviewed by the degree program's director at least once each semester to determine whether satisfactory academic progress has been made. At that time the program's director may take the following actions:

Remove probation: Probation may be removed if the student has satisfactorily addressed deficiencies, even if this is before the time frame originally designated by the program director.

Continue probation: Progress is being made.

Recommend dismissal: Performance continues to be unsatisfactory.

Written notification is provided to the student regarding the outcome of this review.

Probation is considered an adverse action and may be reported in future graduation verifications and other requests for information.

Dismissal

1.

2.

3.

Typically, students will be recommended for dismissal only after they have been given a reasonable probationary period to address deficiencies. The M.P.H. program follows School of Medicine policy for formal remediation, probation, dismissal, and appeals. See the Academic Policies for All School of Medicine Programs chapter of this catalog for more information on these topics.

Eligibility to Reapply

If a student withdraws from the M.P.H. program, reentry is possible only through the application process.

Student Support and Advisory Services

Academic Advisory Resources

Academic Adviser

Each student meets with their academic adviser twice per year. Academic advising meetings provide the opportunity to discuss course selection, progress toward meeting the degree requirements, and any academic challenges and how they may be addressed. Additional meetings may take place as needed at the student or adviser's request.

Mentoring Committee

Each student has a mentoring committee of three to four faculty members during their time in the M.P.H. program. The student is responsible for scheduling a full meeting of their mentoring committee at least once per term. The meetings are an opportunity for the student to garner insight from an interdisciplinary team of experienced professionals on long-term directions for the student's training and career.

While the process of identifying members of the mentoring committee may vary from one track to another, students are expected to submit a confirmed list of their mentoring committee members by December of the first year. Changes to mentoring committees may be approved by the track director, if needed.

Practicum Advising

Starting in the fall of their first year, students meet periodically with the practicum director on an individual basis to discuss the types of skills and experiences they would like to develop during the public health practicum, and potential sites and activities that align with their goals.

Thesis Adviser

The thesis adviser serves as the course director for the series of courses associated with the thesis. In this role, the thesis adviser guides students through the planning, research, and writing of the thesis. Each student also has a primary thesis mentor who is directly connected to the research or project of the student's thesis and who can provide more contentspecific support.

Career Advisory Support

Career Advising

Students may meet with their track director and/or the practicum director for individual career advising meetings to discuss topics such as creating a targeted job search plan, resumes, CVs, and cover letters, LinkedIn and online networking, preparing for interviews, applying to advanced degree programs, fellowships, and letters of recommendation. These meetings are scheduled as needed, at the student's request.

In addition to individual career advising meetings, career development offerings for students in the M.P.H. program include:

- M.P.H. Career Development Series
- Translational Bridge Seminar Series
- Newman Society Seminar Series

Additional information about M.P.H. program career development offerings can be found at medschool.vanderbilt. edu/mph/current-students/career-development.

Health and Wellness

See Vanderbilt University Student Resources in the Life at Vanderbilt chapter of this catalog.

Conflicting Faculty Roles

In addition to the information about faculty and educator roles in the Education at the Vanderbilt University School of Medicine chapter of this catalog, M.P.H. track directors are responsible for avoiding conflicts of interest when assisting students in identifying faculty members for their mentoring committee.

Other Program Policies

Program Evaluation



The purpose of evaluation in the M.P.H. program is to provide timely information that can be used to determine the effectiveness of program's curriculum and teaching and, ultimately, to determine whether the program is accomplishing its goals. The evaluation process supports continuous improvement of all program components. All students, faculty members, and staff members have a role in identifying needs and implementing strategies for improvement.

In the M.P.H. program, evaluation activities include, but are not limited to:

- **Course** evaluations
- Practicum and thesis evaluations
- Interprofessional education (IPE) evaluations
- Student assessments data
- Exit surveys and exit interviews
- Admissions and graduate outcomes data

Course evaluations, practicum evaluations, IPE evaluations, and thesis evaluations include sections for the evaluation of faculty course instructors, teaching assistants, practicum site supervisors, IPE preceptors, thesis advisors, mentors, and relevant administrators. Specific feedback from these evaluations is reviewed by the program director, the Curriculum Committee, and the relevant faculty member or individual with the goal of improvement.

In addition, feedback from faculty course instructors, practicum site supervisors, IPE preceptors, thesis advisors, mentors, and relevant administrators is elicited on how the program leadership can better support them.

Data from evaluation activities are compiled on a semester or annual basis and distributed to the program leadership and Curriculum Committee for review. Responsible individuals and/or committees summarize data. Areas of improvement are addressed with action plans and measurable goals to assess progress toward improvement. Updates on progress toward improvement are discussed at subsequent meetings.

Student Engagement

Students have formal and informal opportunities to participate in program-level policy- and decision making.

Students are selected to serve on the program's Advisory, Curriculum, and Diversity Committees during their M.P.H. training. Committee members are expected to attend and participate in committee meetings. Students interested in serving as committee members should contact their track director and request to be considered.

Each class has a student class representative who serves as a liaison between the students and the M.P.H. program leadership. The class representative is also responsible for coordinating events and activities and sharing information with their classmates. Information about the position and election procedures can be found in the M.P.H. Student Handbook located at medschool.vanderbilt.edu/mph.

A on Catalor incine With respect to policy and decision making in the School of Medicine, non-M.D. degree programs with enrollment of ten or more may have one student representative on the Honor Council. Rising second-year M.P.H. students nominate and vote to select an Honor Council representative to serve for one year. More information, including the Honor Council bylaws, can be found in the Education at the School of Medicine chapter above.

Leave of Absence

Students who wish to interrupt their study must request a leave of absence in writing from the program director. Stu dents may consult with Vanderbilt University Student Access Services (vanderbilt.edu/student-access/) when contemplating a leave of absence, and program administrators may consult with student access services when evaluating a request for leave of absence. The program director will provide a decision regarding the request. A one-time leave of absence may be granted for a maximum of one year for students seeking a master's degree.

Students taking a leave of absence are responsible for meeting with the program director prior to the leave in order to plan for their course work and timeline for successful degree completion following their return. Students who do not register for classes before the ending date of a leave of absence may be disenrolled and required to request reinstatement to the program. The maximum time allowed to complete the degree is four years, unless there are unusual circumstances which merit an extension of this limit.

Attendance

Students are required to attend all class sessions. The course instructor may choose to make an exception for a student with extenuating circumstances. The student should contact the instructor to request an exception before the anticipated absence.

Student Work Policy

It is recommended that students work no more than twenty hours per week during academic terms. It is recommended that the student contact their track director to discuss increasing their work hours.

Master of Science (Applied Clinical Informatics)

Program Overview

The Department of Biomedical Informatics at Vanderbilt University offers a two-year M.S. (Applied Clinical Informatics) (M.S.-A.C.I.) degree program. At many institutions, the role of clinical informatics leaders (known as clinical informaticians) has evolved from introducing electronic health records and practice transformation techniques to the effective evaluation and improvement of patient outcomes. Increasingly, local improvements must be integrated into accountable-care organizations, clinically integrated networks, and other inter-organization collaborations that emphasize both quality improvement and cost reduction. These factors create a profound need for trained informatics professionals from a variety of clinical and nonclinical disciplines who share a deep theoretical and practical understanding of the care process, informatics concepts, and the changing social, organizational, and economic context in which health care is delivered.

Vanderbilt's M.S. (Applied Clinical Informatics) is designed to develop leaders who are prepared to advance the science and practice of clinical informatics. The M.S.-A.C.I. program is designed for clinicians who desire rigorous, practical informatics training (e.g., board-certified and non-boarded physicians, nurses, pharmacists) and professionals from a wide range of disciplines (e.g., information technology, public health, health care policy, business management, research informatics) who contribute and collaborate to promote safe, efficient, and effective health care.

Program Mission/Goals/Objectives

The objective of the program is to provide innovative clinical informatics education for working professionals in the health care field, with graduates assuming leadership roles in the application and innovation of clinical informatics nationally.

The M.S.-A.C.I.'s goal is to develop clinical informaticians who are capable of developing and leading innovative applications of information technology and information systems that address clinical, research, and public health priorities.

Standing Program Committees

Admission and Promotion Committee

The Admission and Promotion Committee is responsible for reviewing applications for the M.S.-A.C.I. program, for inviting applicants for a personal or phone interview, and for making recommendations of candidates for admission to the program.

In the spring term, the Admission and Promotion Committee is charged with making recommendations to the program director regarding progress, promotion, or graduation of students.

The Admission and Promotion Committee is appointed by the program director and consists of three to five program leaders (one of whom is the program director). Josh Peterson, Chair. Yaa Kumah-Crystal, Chris Lehmann.

Advisory and Curriculum Committee

The Advisory and Curriculum Committee is charged with development and oversight of the M.S.-A.C.I. program curriculum. It also provides oversight of the evaluation and planning efforts for the program, including review of attainment of stated goals and objectives. The committee facilitates the long-range planning efforts of the program and provides other guidance to the program as requested. The ACC consists of all M.S.-A.C.I. course directors, and DBMI vice chair for educational affairs. The ACC meets once per year, or more often as needed.

Program's Major Facilities

The M.S.-A.C.I. program office and meeting rooms are located on the 14th and 15th floors of the 2525 West End Avenue building, which is also where the main offices of the Department of Biomedical Informatics are located. The M.S.-A.C.I. is primarily an online program. M.S.-A.C.I. students are required to complete synchronous course requirements via GoToMeeting on Thursday evenings from 5:00–8:00 p.m. CST each week. The program also requires students to attend a one-to-two-day, in-person session every semester at the 2525 West End Avenue location.

Admission

Admission Requirements

Applicants must hold a bachelor's, master's, or doctoral degree. At least two years of relevant, post-undergraduate professional experience, education, or training is strongly preferred.

GRE, MCAT, or other pre-professional equivalent test scores are required.

The TOEFL exam is required for applicants whose primary language is not English.

Applicants are not required to have formal training in computer science or a related discipline, but they need to demonstrate a strong interest and aptitude in clinical informatics.

Students without a computational background are encouraged to take at least one introductory-level course in computer science before entering the program.

Application Process

To apply for the M.S.-A.C.I. program, candidates must submit an online application and all supporting materials by February 15 (standard deadline). New students may matriculate only in the fall semester. Applications from highly qualified candidates who apply after the deadline will receive consideration, as long as a completed application is submitted no later than April 30.

Online applications are submitted at *apply.vanderbilt.edu/apply*.

Program to which you are applying: Medicine-Non MD Program: Master of Science in Applied Clinical Informatics Degree: MSACI

Complete information about the application process is available online at *medschool.vanderbilt.edu/biomedical-informatics/msaci*.

Admission Offer and Acceptance

Admission decisions are made on an ongoing basis once all required documents have been received and an application is ready to be assessed. Applicants who are admitted to the program receive an email communication from the program director with further instructions and a deadline to accept the offer of admission.

Transfer Students/Credits

The M.S.-A.C.I. program does not accept transfer students.

Non-degree-seeking Students

The M.S.-A.C.I. program does not allow non-degree-seeking students.

Visiting Students

The M.S.-A.C.I. program does not allow visiting students.

Degree Requirements

Requirements to Earn Degree

The program provides a 36 credit hour curriculum in 21 months, with a course work intensive first year followed by a second year devoted to a capstone project.

Length and Delivery of Program

The normal time frame for completion of required course work for the master of science (applied clinical informatics) is 21 months. The maximum time frame for completion of this degree is three years.

Curriculum

The curriculum emphasizes a deep theoretical and practical understanding of the care process, informatics concepts, information technologies, computer science, and the changing social, organizational, and economic context in which health care is delivered. This understanding is developed through course work, over 240 hours of practicum experience that uses real HIT data and systems and health care contexts, and a mentored capstone project.

Didactics

Expert faculty who comprise the largest biomedical informatics department in the U.S. lead nine M.S.-A.C.I. courses, which include the core content for health professionals intending to apply for the American Board of Medical Specialties Clinical Informatics Certification or the emerging certification programs in Health Informatics:

- Introduction to Clinical Informatics
- Health Information Systems and Applications
- The Health System
- Clinical Information Systems
- Clinical Decision Support
- Clinical Workflow
- Data Standards

- Information System Lifecycle
- Management and Organizational Change

Practicum Experience

A practicum experience requires a minimum of 240 clock hours, to be completed during year 2. The practicum requirement can be satisfied in highly flexible ways, e.g., at VUMC, at home institution, or at other sites (with M.S.-A.C.I. program approval). The trainee must be embedded (i.e., assigned to participate as a member) in an interdisciplinary team that is addressing a significant clinical informatics challenge. This includes attending regular team meetings and participating in analysis of issues, planning, and implementation of recommendations from the team. The interdisciplinary teams must include physicians, nurses, other health care professionals, administrators, and information technology/system personnel, as appropriate.

Capstone Project

A required capstone project running throughout the program provides students with knowledge and skills required to design and conduct applied research studies to evaluate the efficacy of informatics applications in the clinical environment. Based on personal career objectives and informatics challenges that they identify in practica, the capstone project may be completed as a cohort, a sub-cohort group, or individually, depending on its design and the needs of our learners. The project begins in the first year and continues in the second year. Each student selects a Capstone Project Committee, which includes a committee chair (a DBMI faculty member), a practice mentor (someone within the student's home department or organization), and the M.S.-A.C.I. capstone course director.

Course List

A full list of program courses is provided in this catalog under "Courses of Study."

Tuition, Fees, and Financial Aid

2019/2020

The following university costs are included with tuition:

- professional liability insurance
- student health service
- verifications

Academic Year 2019/2020 Tuition

Tuition, 1st year	\$43,763
Tuition, 2nd year	14,588

The total estimated cost of attendance for a first year student is \$79,042. The estimated cost of attendance for a second-year student is \$41,302.

The M.S.-A.C.I. is a distance education program. The total estimated costs of attendance are based on costs of living in Nashville, Tennessee, but many M.S.-A.C.I. students live in other locations with varying costs of living. Please consult the link below for additional details.

(See medschool.vanderbilt.edu/financial-services/master-ofscience-in-applied-clinical-informatics-cost-of-attendance.)

Payment of Tuition and Fees

Please refer to the School of Medicine Tuition, Fees, and Financial Aid chapter of this catalog for more information about university costs and School of Medicine fees. Additional information can be found at *finance.vanderbilt.edu/stuaccts*.

Student Assessment

Grades

The M.S.-A.C.I. program follows School of Medicine policy for grades. See the Academic Policies for All School of Medicine Programs chapter of this catalog for more information.

Non-didactic courses are graded using Pass/Fail grading.

Practicum Assessment

The practicum experience requires that the trainee is embedded (i.e., assigned to participate as a member) in an interdisciplinary team that is addressing a significant clinical informatics challenge. This includes attending regular team meetings and participating in analysis of issues, planning, and implementation of recommendations from the team. The interdisciplinary teams may include physicians, nurses, other health care professionals, administrators, and information technology/system personnel, as appropriate. The student will be graded (Pass/Fail) by the practicum course director after each rotation, based on assessments by rotation leaders.

Progress and Promotion

Periodic Reviews

In the spring term, the Admission and Promotion Committee is charged with making recommendations to the program director regarding progress, promotion, or graduation of students.

Satisfactory Academic Progress and Good Standing

All students who maintain at least a 3.0 GPA and have earned at least a B- in all course work/practica, are considered to be making satisfactory academic progress. M.S.-A.C.I. students must register each fall, spring, and summer semester with no breaks in registration to remain in good standing, except in cases of approved leave of absence.

Graduation

Promotion Committee Endorsement

In the spring term, the Admission and Promotion Committee is charged with making recommendations to the program director regarding progress, promotion, or graduation of students.

Allowance for Delaying Graduation

Graduation may be delayed beyond the normal time required to complete for formal remediation or approved leave(s) of absence.

Formal Remediation and Probation

Formal Remediation Plan

Students who receive a grade of C+ or poorer in academic courses may be required to remedy the grade as specified in a formal remediation plan. Possible remedies include re-examination or course/practica repetition. Credit may be given on the basis of re-examination or satisfactory repetition of the course/practica work, but the original grade remains on the record and may be counted in the computations as cause for dismissal, if additional poor performance occurs.

Probation

Students who do not successfully complete a formal remediation plan may be placed on probation. Students who fall below an average of 3.0 are placed on probation for one semester. If the student's performance does not improve during the semester, the program director, the vice-chair for educational affairs, and the department chair will decide whether to dismiss the student or to allow the continuation of probation. If, at the end of the second semester, the student's grade point average remains below 3.0, the student is advised to withdraw or face dismissal from the program.

Dismissal

The M.S.-A.C.I. program follows School of Medicine policy for formal remediation, probation, dismissal, and appeals. See the Academic Policies for All School of Medicine Programs chapter of this catalog for more information on these topics.

Student Support and Advisory Services

Academic and Career Advisory Resources

The program director has an open door policy for all students in the M.S.-A.C.I. program.

Health and Wellness

See Vanderbilt University Student Resources in the Life at Vanderbilt chapter of this catalog.

Other Program Policies

Program Evaluation

The M.S.-A.C.I. performs course evaluations at the end of each term. These evaluations are sent to all students enrolled in didactic courses. Course evaluations cover important course quality indicators, including level of difficulty, course structure/ organization, instructor effectiveness, and text quality, and they also give students an opportunity to provide overall feedback.

Leave of Absence

Students who wish to interrupt their study must request a leave of absence in writing from the program director. The written request must outline the nature of the requested leave and provide the starting and ending dates for the of absence. Students may consult with Vanderbilt University Student Access Services (vanderbilt.edu/student-access/) when contemplating a leave of absence, and program administrators may consult with student access services when evaluating a request for leave of absence. The program director will provide a written decision regarding the request.

A one-time leave of absence may be granted for a maximum period of one year, as long as the student is in good academic standing. Students taking a leave of absence are responsible for meeting with the program director prior to the leave in order to plan for their course work and time line for successful degree completion following their return. Students who do not register for classes before the ending date of a leave of absence may be disenrolled from the program and required to request reinstatement.

Attendance and Leave

s as stu-urements. All students are expected to attend each class session (online and face-to-face). Students must notify the instructor if they will miss a class session. It is the responsibility of the student to obtain class notes and assignments. For significant absences, such as missing greater than two classes per semester, a remediation plan must be submitted to the course director and program director.

Student Work Policy

M.S.-A.C.I. students are allowed to work full time as long as students can meet program expectations and degree requirements.

Master of Science in Clinical Investigation

Program Overview

The Master of Science in Clinical Investigation (M.S.C.I.) program trains investigators in the techniques and processes used in patient-oriented research. This program provides direct, mentored experience in clinical and translational investigation and, through didactic work, provides trainees with a strong foundation in study design, biostatistics, biomedical ethics, human genetics, drug and device development, and genomics.

Graduates compete for grants such as the K23, VA Career Development Award, R01, and major foundation grants.

The M.S.C.I. is a full-time, two-year (five academic terms) program. More information is available online at *medschool. vanderbilt.edu/msci/*.

Program Mission/Goals/Objectives

Mission

The mission and objective of the M.S.C.I. program is to train investigators in the techniques and processes utilized in clinical and translational research. The means to accomplish this mission include didactic coursework, a mentored experience in clinical investigation, and career path development, which culminates with the completion of a final project.

Goals

To cultivate the following:

Outstanding Academician:

- Researcher, mentor
- Clinician/educator, teacher
- Administrator, patient advocate, policy maker

Industry:

- Knowledgeable about molecular biology, pharmacology, and genomics
- Gifted clinical researcher
- Able to move with the speed of commerce

Objectives

- Train investigators in the techniques and processes utilized in clinical and translational research.
- Provide trainees, through didactic courses and a mentored experience in clinical investigation, a strong foundation in the core skills and methods necessary for success in clinical and translational research. Such skills include the following:
 - o Biostatistics and experimental design
 - o Biomedical ethics
 - o Issues in the drug discovery process
 - o Assay methods
 - o Grantsmanship and grants management, and
 - o Scientific communication skills
- Strengthen Vanderbilt's pre-eminent leadership role in the development of future leaders in clinical and translational research.
- Benefit society by training and nurturing biomedical scientists whose efforts will improve human health.

Standing Program Committees

M.S.C.I. Admission Committee

The M.S.C.I. Admission Committee annually reviews candidates for admission by gauging the quality of the candidate's research proposal, career objectives, and the primary mentor's commitment to the candidate's career pathway and trajectory. The M.S.C.I. program director and associate director serve as ex officio reviewers, and the M.S.C.I. program manager acts as the convener.

Evan Brittain, Richard Ho, J. Matthew Luther, Todd Rice, Ashley Shoemaker.

M.S.C.I. Promotion Committee

In the event an M.S.C.I. candidate does not submit a peer-reviewed manuscript or major federal or foundation grant application as the M.S.C.I. final project, the M.S.C.I. Promotion Committee reviews the submitted master's thesis. In addition to the M.S.C.I. leadership team, the M.S.C.I. Promotion Committee includes:

Prince Kannankeril, Ingrid Mayer, Pratik Pandharipande, Alan Storrow.

Executive Advisory Committee

The Executive Advisory Committee provides strategic insight to the national and international clinical and translational research communities for the Master of Science in Clinical Investigation program. The M.S.C.I. Executive Advisory Committee meets triennially during the spring. The composition of the EAC includes the M.S.C.I. Program leadership and:

John A. Oates, Chair. Gordon Bernard, Robert Dittus, Susan Guttentag, Katherine E. Hartmann, Larry Marnett, Tommy Wang, Consuelo Wilkins. Nancy Brown, ex officio; Senior Associate Dean of OHSE, ex officio.

M.S.C.I. Curriculum Committee

The M.S.C.I. Curriculum Committee ensures the quality of the curriculum and program development based on the needs for educated and trained clinical and translational scientists. The M.S.C.I. Curriculum Committee meets ad hoc. In addition to the M.S.C.I. leadership team, the M.S.C.I. Curriculum Committee includes:

Joey Barnett, Kelly Birdwell, Tina Hartert, Leora Horn, Quinn Wells.

Program's Major Facilities

The M.S.C.I. program office is located on the second level of the Annette and Irwin Eskind Family Biomedical Library and Learning Center, 2209 Garland Avenue, in room 230. The classrooms are located in Rudolph A. Light Hall, 2215 Garland Avenue.

Admission

Admission Requirements

Eligible candidates for the M.S.C.I. program include:

- Board-eligible physicians enrolled in a fellowship program at Vanderbilt or Meharry Medical College
- Vanderbilt or Meharry residents with protected time for research

- Vanderbilt faculty members with the consent of their department chairs
- Vanderbilt M.D. students after the completion of the first three years of medical education
- Postdoctoral Ph.D.'s anticipating a career in patientoriented research, and
- Ph.D. candidates in the School of Nursing anticipating a career in patient-oriented research.

Scholars external to Vanderbilt/Meharry will be considered based on the availability of a suitable mentor within Vanderbilt and secured funding.

Application Process

Candidates should submit an application that includes biographical information, references, career goals, and a specific proposal for a clinical and translational research project. The research proposal must identify the candidate's mentor. Applications will be judged on the quality of the science proposed, on the commitment of the mentor to the career development of the candidate, and on the overall impact of the training program on the applicant's career development. The application deadline is February 28.

Candidates must be in good standing with their home department at all stages during admission and remain in good standing with the home department and the M.S.C.I. program throughout matriculation.

Required Application Materials

1. The electronic application system may be accessed at: apply.vanderbilt.edu/apply/

Area of Study: Medicine-Non MD Program: Clinical Investigation

- Letter from mentor documenting commitment to the candidate's career development. Please include a copy of the mentor's curriculum vitae.
- 3. Three letters of recommendation (may include mentor).
- 4. Letter from division director or department chair assuring 80 percent protected time for research.
- 5. Research Plan: The three-to-five-page proposal should describe specific aims, background and significance, experimental methods, procedures, and long-term objectives. Plans exceeding the five-page limit will be returned. Be sure to provide a title for your project.
- 6. Curriculum vitae of the applicant.
- Statement of how this proposed research plan fits into your career objectives.

You may upload your research plan, curriculum vitae, and career statement in the application section labeled Statement of Purpose.

- 8. Letter stating confirmation of tuition payment throughout matriculation from responsible person or department on official letterhead.
- 9. Undergraduate and medical school transcripts. Official transcripts must come directly from the issuing institution, not the candidate.

Candidates submitting official transcripts from international institutions should refer to the University Registrar's guidelines at *registrar.vanderbilt.edu/academic-records/ external-degree-verifications.php*. International students with questions about the prior degree verification process may contact the University Registrar's Office.

Please send official e-Scripts or official electronic transcripts to:" *MSCI@vanderbilt.edu*

Mail official transcripts to: Arnita L. King, M.Ed. Master of Science in Clinical Investigation 2209 Garland Ave PMB 407913 Nashville, TN 37240

Selection Criteria, Offer, and Acceptance

Proposals will be evaluated on the following criteria:

- Proposals must outline clinical and translational research that is hypothesis driven and mechanistic.
- Performance of the project must be feasible within a two-year period.
- Project mentors must have extramural research grant funding that is assured for the duration of the project.
- Sponsoring departments will be expected to guarantee that 80 percent of the candidate's professional time will be devoted to the goals and objectives of the M.S.C.I. program.

Transfer Credits

The M.S.C.I. program allows matriculated students to transfer equivalent graduate-level courses taken up to two years prior to admission into the Vanderbilt M.S.C.I. program. Only courses taken at accredited institutions will be considered; a maximum of 9 credit hours are allowed for transfer into the M.S.C.I. program. Determination of equivalence will be made by the program director in consultation with the course director.

Non-degree-seeking Students

Non-degree-seeking enrollees (special students) are often individuals who enroll in a course to determine if the Vanderbilt M.S.C.I. program is a good fit for their academic needs and career trajectory. The cost of tuition for a non-degree-seeking student is the established per credit hour for the academic year. The purchase of textbooks, software, and other research supplies is the responsibility of the non-degree-seeking student.

Auditing M.S.C.I. courses is not allowed.

Visiting Students

Scholars external to Vanderbilt/Meharry will be considered based on the availability of a suitable mentor within Vanderbilt and secured funding.

Degree Requirements

Requirements to Earn Degree

- Candidates for the M.S.C.I. must complete 35 semester credit hours of the core course work.
- Completion of a final project in the form of a submission ready, extramural grant or an original article for publication in a peer-reviewed journal is also required.

Students who are unable to complete a grant or manuscript may submit a thesis. The thesis should include a brief introduction explaining why a grant or manuscript could not be submitted. No oral presentation is required. The thesis should include a brief statement of the student's role in the work to be described in the research report and a 10-to-15-page report outlining the hypothesis tested, background and significance of the work, the experimental approach and methods, data analysis/sample size calculations, anticipated results and pitfalls, results to date, interpretation of results, discussion of results, and future plans. The thesis is reviewed and approved by the Promotion Committee.

Length and Delivery of Program

The program typically takes two years (five academic terms) to complete. Core courses are provided in two formats:

- 1) intense courses that meet three hours each day (e.g., 8:00 a.m. to 11:00 a.m.) for four weeks
- 2) and courses that can be offered less intensively (two to four hours a week for several months).

The course schedule is designed to maximize protected time for patient-oriented research.

Curriculum and Tracks

Didactic Work: Candidates must complete 35 credit hours of courses covering the essentials of study design, biostatistics, ethics, drug development, and data analysis. It is expected that course work comprises 20 percent of the candidate's time commitment.

Mentored Research Apprenticeship

The core of the M.S.C.I. program is the completion of a mentored research project. The research must be patient-oriented and involve direct measurements on patient-derived samples or the use of investigational therapeutic or diagnostic techniques. The mentor must be an established physician-scientist with experience in patient-oriented research. Use of the Vanderbilt University Clinical Research Center is encouraged. The research project accounts for 80 percent of the candidate's commitment to the program.

Master's Final Project

The candidate submits a manuscript to a peer-reviewed journal, provides a completed proposal for a federal or major foundation grant, or develops a master's thesis based on his or her research project. Completion of the thesis requirement is evaluated by the M.S.C.I. Promotion Committee.

Other Degree Requirements

Career Path Development: In addition to the formal curriculum, a monthly seminar series, "Clinical Scientist Career Seminars," permits candidates to meet successful patient-oriented researchers. Topics of discussion include academic "rules of the road," time management, promotion/ tenure issues, grants management, and authorship. Candidates hone their scientific communication skills through an annual presentation at the M.S.C.I. Case Studies forum. The directors host networking events with the candidates, clinical investigators, mentors, and visiting scientists.

Course List

A full list of program courses is provided in this catalog under "Courses of Study."

Tuition, Fees, and Financial Aid

2019/2020

The following university costs are included with tuition:

- professional liability insurance
- student health service
- verifications

Academic Year 2019/2020 Tuition

Tuition, 1st year	\$38,800
Tuition, 2nd year	19,400
Special, Non-degree-seeking (per credit hour)	1,613

The total estimated cost of attendance for a first-year student is \$74,079. The estimated cost of attendance for a second-year student is \$46,114.

(See medschool.vanderbilt.edu/financial-services/ master-of-science-in-clinical-investigation-cost-of-attendance.)

Payment of Tuition and Fees

Please refer to the School of Medicine Tuition, Fees, and Financial Aid section of this catalog for more information about university costs and School of Medicine fees. Additional information can be found at *finance.vanderbilt.edu/stuaccts*.

Student Assessment

Grades

Students in the Master of Science in Clinical Investigation program will be evaluated in each course. Letter grades, consistent with grading policy established in the School of Medicine Academic Policies—Grading section of this catalog, will be given by the course director, based on attendance, class work, homework, test results, and final exams.

Only courses with a grade of B- or better will count toward the M.S.C.I. program requirements. Courses for which a grade of C+ or lower is awarded will need to be retaken.

Master's research, research extension, and case studies courses are graded on a pass/fail scale and are not considered in calculation of GPA.

Grade Grievance Procedures

Students who believe their academic performance has not been judged reasonably or fairly, or who believe their intellectual contributions have not been fairly acknowledged, should consult the program director. The M.S.C.I. program follows procedures described in the School of Medicine Academic Policies chapter of this catalog, which include encouraging the student to seek redress of a problem as soon after receiving the grade and in no case later than four weeks after the event.

A director of the M.S.C.I. program will serve as liaison and counselor for issues that arise between mentor and trainee. For a situation that cannot be resolved with the assistance of an M.S.C.I. program director or a grievance that may arise between a trainee and the M.S.C.I. program, a grievance committee will be assembled. The grievance committee will consist of the senior associate dean for faculty or designee, two M.S.C.I. mentors unaffiliated with the involved parties, and the M.S.C.I. student representative.

The grievance committee will assemble the details of the situation and make a written recommendation that is presented to the directors of the M.S.C.I. program and to the grievant, who may provide written comment on the recommendations.

The directors of the M.S.C.I. program will review all of the relevant materials, reach a conclusion on the resolution of the grievance, and send a written copy of the final recommendation to the grievant. The grievant may appeal this decision to the senior associate dean for health sciences education.

Progress and Promotion

Periodic Reviews

Candidates will meet annually with the M.S.C.I. program director, or designee, for a 15-minute check-in to review progress. Year 1 candidates will meet during the spring term and year 2 candidates will meet during the fall term.

Satisfactory Academic Progress and Good Standing

A cumulative grade point average of at least B- is required for graduation. A semester average of at least B- is required to remain in good academic standing. A student whose cumulative grade point average falls below B- may be placed on probation for one semester. If at the end of the semester the grade point average is still below B-, the student may be dismissed from the program based on unsatisfactory academic performance.

Graduation

Promotion Committee Endorsement

The subsequent step in the graduation process is a review and approval of the student's thesis by the M.S.C.I. Promotion Committee.

Allowance for Delaying Graduation

It is anticipated that all the students will complete the graduation requirements by the end of the fifth semester of enrollment. Graduation may be delayed by formal remediation of course work or an approved leave of absence.

In the case of any potential delays, the student is allowed to extend the graduation date by six months, twice (total of one year). In unusual circumstances (including, but not limited to health problems, change of jobs, move to another institution), an additional extension up to one year will be granted. During a period of extension, the student will be enrolled in the Research Extension course, a status that incurs no tuition costs.

Program 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 a summer or fall semester may participate in Commencement the following May, and ordinarily the degree will be conferred at the end of the term in which requirements are completed. Any student unable to participate in a Commencement ceremony will receive his or her diploma by mail.

Formal Remediation and Probation

Formal Remediation Plan

A student may be required to engage in a process of formal remediation if a need to improve performance or progress is identified (i.e., course grade or examination results that indicate student struggles to or fails to grasp basic learning objectives or core competencies). In such cases, the student works with the M.S.C.I. program director to develop an individualized plan and timeline for remediation.

Probation

A student may be placed on academic probation if the student's cumulative grade point average falls below B-, or their course grades include any failures. If at the end of the semester of academic probation the grade point average is still below B-, the student may be dismissed from the program based on unsatisfactory academic performance.

Students placed on probation are notified through a letter from the program director that outlines the reasons for the probation; the requirements and recommendations for addressing deficiencies; the conditions for removal of probation, including an expected time frame; and actions that will be taken if conditions are not met.

Students placed on probation for any reason will be required to complete a specific remediation plan that has been approved by the program director. The remediation plan may include requirements for the student, such as regular meetings with advisers, elimination of extracurricular activities that may be interfering with satisfactory academic progress, etc.

Students may appeal to the senior associate dean for health sciences education for reconsideration of the decision to place the student on probation.

All students on probation will be reviewed by the program director at least once each semester to determine whether satisfactory academic progress has been made. At that time the program director may take the following actions:

- 1. Remove probation: Probation may be removed if students have satisfactorily addressed deficiencies, even if this is before the time frame originally designated by the program director and the academic progress review committee.
- 2. Continue probation: Progress is being made.
- 3. Recommend dismissal: Performance continues to be unsatisfactory.

Written notification is provided to the student regarding the outcome of this review.

Probation is considered an adverse action and may be reported in future graduation verifications and other requests for information.

Dismissal

The M.S.C.I. program follows School of Medicine policy for formal remediation, probation, dismissal, and appeals. See

the Academic Policies for All School of Medicine Programs chapter of this catalog for more information on these topics.

Eligibility to Reapply

If a student withdraws from the M.S.C.I. program, reentry is possible only through the application process.

Student Support and Advisory Services

Academic Advisory Resources

Edge for Scholars The Editor's Club Office of Research Office of Research Support Services Clinical Research Boot Camp training workshops Institutional Review Board CRC Research Skills Workshops Series Department of Biostatistics Clinics Center for Science Communication **StarBRITE** REDCap Survey Research Shared Resource Vanderbilt Institute for Clinical and Translational Research (VICTR) **Research Support Services** Qualitative Research Core

Career Advisory Support

Clinical and Translational Career Development Vanderbilt Institute for Clinical and Translational Research (VICTR) Edge for Scholars Newman Society Translational Bridge Society The Partnership in Actively Retaining Talented Early-career Researchers Office of Sponsored Programs

Health and Wellness

VUMC Faculty and Staff Health and Wellness VU Faculty and Staff Health and Wellness VUMC Employee Assistance Program

VU Employee Assistance Program

The Partnership in Actively Retaining Talented Early-career Researchers

Other Program Policies

Program Evaluation

Program evaluation for M.S.C.I. is performed with four different metrics:

- 1. Student course evaluations, administered by the M.S.C.I. program for every course offered in the program at the end of the term.
- 2. After student graduation, successful job placement is assessed.

- 3. After student graduation, successful publication of peerreviewed manuscripts is assessed.
- 4. After student graduation, grant funding from federal and major foundations is assessed.

Specific feedback from course evaluations is reviewed by the faculty member responsible for the course and the program director with the goal of improvements in the presentation of course material during the next offering of the course.

Other materials are evaluated by the program director and subsequently by the faculty with the aim of providing overall program feedback, which helps direct program modifications and improvements. These evaluations occur on an annual basis.

Leave of Absence

A student may request a leave of absence from school for any reason (personal, medical, maternity/paternity, research, dual degree, etc.), subject to the approval of the program director. The student must submit a written request to the program director, outlining the nature of the requested leave and providing the starting and ending dates. Students may consult with Vanderbilt University Student Access Services (*vanderbilt. edu/student-access*) when contemplating a leave of absence, and program administrators may consult with student access services when evaluating a request for leave of absence.

The program director may grant the student a leave of absence for up to one year, as long as the student is in good academic standing. Prior to leave, a plan for re-entry into the curriculum and meeting requirements for graduation should be outlined with the program director.

A student on leave of absence may request an extension of the leave beyond one year, subject to the approval of the program director. The student must submit a written request outlining the nature of the requested extension and providing a new ending date. A request for extension of a leave of absence must be submitted to the program director at least three months before the ending date of the approved leave. Requests may be made for additional extensions using the process outlined above.

Upon return from LOA, the student must complete and update immunization records and all other compliance requirements.

Students who are not in good academic standing may request a leave of absence using the request procedure described above.

Attendance and Leave

All students are expected to attend each class session. Students should notify the instructor should they knowingly have to miss a class. It is the responsibility of the student to obtain class notes and assignments. Penalty for non-class attendance is at the discretion of the instructor and/or the program director

Honors and Awards

All honors and awards are contingent upon available funds to support the award.

M.S.C.I. Hazinski. Merit scholarship in honor of Dr. Tom Hazinski; 50 percent tuition scholarship after the use of the employee tuition benefit, if eligible.

- M.S.C.I. Diversity. Merit scholarship for URM scholars (underrepresented in medicine); 50 percent tuition scholarship after the use of the employee tuition benefit, if eligible.
- M.S.C.I. CTSD (Clinical and Translational Scientist Development). Merit scholarship for emerging physician-scientists who demonstrate a commitment to pursue clinical and translational science and research along with a clinical practice; 50 percent tuition scholarship after the use of the employee tuition benefit, if eligible.

Degree Programs Under Development

Information about Vanderbilt University School of Medicine degree programs currently under development may be found online at *medschool.vanderbilt.edu/develdegrees*.

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School of Medicine Dual Degree Programs and Policies

M.D. Dual Degree Programs

For all M.D. dual degrees, except the M.D./Ph.D., the first three years are normally spent in the medical school program. Ideally, students apply for dual degree status before enrolling in either degree program. However, M.D. students may elect to apply for admission to a recognized dual degree program at any time during their first three years in the medical school. Students who apply for admission to the medical school during their first year in another recognized dual degree may also be considered for dual degree status.

In most cases, after year three of the M.D. curriculum, students begin work on their other degree program. Depending on the other program, students may complete the second degree before returning to the medical school. The dual degree program allows students to reduce the period of time required to complete each degree separately, usually eliminating one full year of study.

Due to the blended nature of dual degree experiences, participating students are expected to abide by the School of Medicine Honor Code and to maintain the professional standards of the M.D. degree while participating in the alternate degree program, in addition to complying with any standards established by that alternate program. If a student is concerned that expectations between programs may be in conflict, s/ he should confer with the associate dean for medical student affairs.

M.D./Ph.D. (MSTP)

The Medical Scientist Training Program is a dual endeavor between the Vanderbilt University School of Medicine and the Vanderbilt University Graduate School. A single application is made to the M.D./Ph.D. program by indicating M.D./Ph.D. degree on the AMCAS application to Vanderbilt University School of Medicine and completing the MSTP secondary application.

The MSTP allows both dual and alternating enrollment in the School of Medicine and the Graduate School. Trainees are required to fulfill all of the requirements for both the M.D. and the Ph.D.; however, since some competencies for the M.D. are met by the graduate school experience, it is possible for MSTP students to complete the M.D. program in a total of three years. Requirements for successful completion of the Ph.D. are the same for all students at Vanderbilt, and the Ph.D. thesis must be successfully defended prior to reentry into medical school for the final year of training. Most MSTP students will begin their final year of medical school in early July or earlier to complete the Immersion Phase of their M.D. training.

To facilitate the training of clinical investigators, a distinct track within the Vanderbilt MSTP called the MSTP-Clinical Investigation Track (MSTP-CIT) has been developed. The goal of the MSTP-CIT is to provide comprehensive training in science for physician scientists engaged in translational and patient-oriented research. This program is intended for students who enter the MSTP after the third year of medical school or during residency or fellowship. More information may be found at *medschool.vanderbilt.edu/mstp/ admission-process*.

M.D./J.D.

Students must apply separately to both the Vanderbilt University School of Medicine and the Vanderbilt Law School and be accepted by both programs to pursue the dual M.D./J.D.

Students in the dual M.D./J.D. program have the opportunity to complete both degrees in six years.

M.D./M.S. in Biomedical Informatics

Students must apply separately to both the Vanderbilt University School of Medicine and the Vanderbilt Department of Biomedical Informatics and must be accepted by both programs to pursue the dual M.D./M.S. in biomedical informatics.

Students in the dual M.D./M.S. in biomedical informatics program have the opportunity to complete both degrees in six years.

M.D./M.Div. and M.D./M.T.S.

Students with interest in medical and divinity degrees have the opportunity to enroll in one of two dual degree programs. Students must apply separately to the Vanderbilt University School of Medicine and the Vanderbilt Divinity School and be accepted by both to pursue the M.D./M.Div. (M.D./Master of Divinity) or the M.D./M.T.S. (M.D./Master of Theological Studies). Students in the dual M.D./M.Div. program have the opportunity to complete both degrees in six years.

The master of divinity is a professional degree and prepares students for the practice of ministry. This program has a required field education component as part of the master of divinity degree requirements. In this program, students carry 15 credit hours per semester while in the Divinity School.

M.D./M.Ed.

Education is an integral part of medicine. The word "doctor" comes from the Greek word meaning "teacher." Whether a student chooses a career in research or clinical practice, there always will be a need to teach students, patients, and colleagues. Students who choose the M.D./M.Ed. dual degree program may be interested in patient education or in a career in an academic center working in medical education. They also may be interested in leadership positions at the national level that interface with health policy and education. Education will be a large part of prevention in future medical practice.

Students must apply separately to both the Vanderbilt School of Medicine and Peabody College of education and human development and be accepted by both programs to pursue the dual M.D./M.Ed.

Students in the dual M.D./M.Ed. program have the opportunity to complete both degrees in five years.

M.D./M.P.H.

Students must apply separately to the M.D. program and the M.P.H. program in the School of Medicine and be accepted by both programs to pursue the dual M.D./M.P.H.

The M.P.H. requires 42 academic credit hours of course work, which include didactic core and track-specific courses, as well as courses associated with the public health practicum and thesis. Dual degree students spend a minimum of four terms focused on M.P.H. required course work. Students typically complete most or all of the required 42 credit hours during these four terms. The summer term focuses on either the public health practicum or the thesis, and it may also include didactic courses.

The M.D. program's Research Immersion Phase may be completed before matriculating in the M.P.H. program, and/ or it may be integrated with the M.P.H. program's thesis requirements. This time should be planned in advance with input from both the M.D. and M.P.H. programs.

An important component of the M.P.H. program is a mentored research investigation. Pre-identification of a qualified faculty member willing to serve as the student's mentor should be arranged with the help of M.P.H. program staff.

Before a dual degree student can matriculate in the M.P.H. program, he or she must be in good academic and financial standing with the M.D. program and receive approval for his or her plan of study from the M.P.H. program director.

Students in the dual M.D./M.P.H. program have the opportunity to complete both degrees in five years. Additional information may be found at *medschool.vanderbilt.edu/mph/md-mph*.

M.D./MBA

Students must apply separately to both the Vanderbilt University School of Medicine and Vanderbilt Owen Graduate School of Management and be accepted by both programs to pursue the dual M.D./MBA degree.

Students in the dual M.D./MBA program have the opportunity to complete both degrees in five years. The first three years are spent in medical school. Students spend their fourth year at the Owen School and then spend the fall semester of year five in medical school and the spring semester of year five at the Owen School.

M.D./M.A. in Medicine, Health, and Society

In 2008, the Vanderbilt University Faculty Senate approved a master of arts degree in medicine, health, and society (MHS). The proposal for this fully interdisciplinary degree originated from the Vanderbilt University Center for Medicine, Health, and Society (CMHS), which was established in 2003. The goals of CMHS are to promote the study of health and health care in their social, cultural, and historical contexts, and to explore the interface of bioscience, technology, and the humanities.

In addition to educating outstanding clinicians, Vanderbilt University School of Medicine is committed to developing future leaders and scholars in medicine. We recognize that the current challenges facing health and health care demand leaders and scholars in many areas related to medicine. The M.A. in MHS allows selected students to extend their scholarly interests in interdisciplinary areas, although prior work in one of those areas is not required. The MHS degree provides students with additional knowledge and research experience to prepare them for academic careers focused on the political, social, economic, and cultural contexts of the practice of medicine, as well as on biomedical ethics, patient-provider relationships, and health policy.

Students must be accepted by both the Vanderbilt University School of Medicine and the Graduate School, and acceptance to one program does not ensure acceptance to the other.

Dual degree students are able to enter the M.A. program after any year of medical school. If students choose to begin their M.A. studies after the fourth year, they are allowed to delay graduation until after completion of both degrees, as long as they are officially enrolled in the dual degree program. Requirements for the M.D. are the same as those for non-dualdegree students. Students have the opportunity to complete both degrees in five years.

M.D./M.S.C.I.

The Vanderbilt Master of Science in Clinical Investigation program trains investigators in the techniques and processes utilized in patient-oriented research. Through a formal mentored research program combined with didactic work, the program provides trainees with a strong foundation in study design, biostatistics, biomedical ethics, genomics, and drug and device development. There are a number of electives, including but not limited to advanced epidemiology, epigenetics, data management, and big data that allow trainees to get more in-depth involvement in a specialized area. A critical component of the M.S.C.I. program is a direct, mentored experience during the training period, and beyond. Hands-on research involvement and continued exposure to the patientoriented research environment are major requirements of the M.S.C.I. program. Graduates successfully compete for grants such as the K23, VA CDA, R01, and major foundation grants.

Candidates must apply separately to the M.D. and the M.S.C.I. programs in the School of Medicine and be accepted by both programs to pursue the dual M.D./M.S.C.I. Candidates should identify a qualified faculty member willing to serve as the candidate's mentor prior to application to the M.S.C.I. program. The M.S.C.I. program director provides assistance with selecting a qualified faculty mentor. Prior to matriculation in the M.S.C.I. program, the M.D./M.S.C.I. dual degree candidate must be in good academic and financial standing with Vanderbilt University School of Medicine.

The M.S.C.I. requires 35 academic credit hours of course work, which includes a didactic core, as well as a mentored research apprenticeship and a final project. The M.D. program's Research Immersion Phase may be completed before matriculating in the M.S.C.I. program, and/or it may be integrated with the M.S.C.I. program's requirements. Candidates should plan this time with input from both the M.D. and M.S.C.I. programs. Students in the dual M.D./M.S.C.I. program have the opportunity to complete both degrees in five years.

Other Dual Degree Programs

M.P.H./M.Ed. (International Education Policy and Management)

Students interested in the M.P.H. program's Global Health track and the M.Ed. in International Education Policy and Management program have the opportunity to complete both degrees in three years of study (seven academic terms).

Students must apply and be accepted separately to both the M.P.H. program in the School of Medicine and the M.Ed. program in Peabody College of education and human development.

The M.P.H. requires 42 hours of academic credit which include didactic core and track-specific courses, as well as courses associated with the public health practicum and thesis. Dual degree students spend a minimum of three terms (fall, spring, and summer) focused on M.P.H. required course work. They typically complete 36 or more credit hours during these

three terms. The summer term includes didactic courses in the month of May and the completion of the public health practicum.

M.P.H./M.A. (Latin American Studies)

Students interested in the M.P.H. program's Global Health track and M.A. in Latin American Studies program have the opportunity to complete both degrees in three years of study (seven academic terms).

Students must apply and be accepted separately to both the M.P.H. program in the School of Medicine and the M.A. in Latin American Studies program in the Graduate School.

The M.P.H. requires 42 hours of academic credit which include didactic core and track-specific courses, as well as courses associated with the public health practicum and thesis. Dual degree students spend a minimum of three terms (fall, spring, and summer) focused on M.P.H. required course work. They typically complete 36 or more credit hours during these three terms. The summer term focuses on the public health practicum and may also include didactic courses.

Archive Medicine School of Medicine

School of Medicine Certificate Programs

The School of Medicine offers graduate certificate programs to its students who wish to gain focused expertise in a specific area. Each program has its own admission and completion requirements. Students must submit an "Intent to Enroll" form to document their intention to pursue a certificate, as well as other documentation as needed. Permission of the degree program director and the certificate program director are required to pursue a certificate.

Biomedical Ethics

This certificate is designed to enable doctor of medicine students to graduate with a high level of competence in analyzing and resolving ethical issues that they will face in practice and equip them to provide leadership to their colleagues, to the profession, and to the public in biomedical ethics.

Curriculum

This certificate is offered to students in the School of Medicine. Its curriculum consists of three elements:

- 1. An interdisciplinary graduate seminar, Healthcare Ethics— Theory and Practice (IDIS 7222).
- 2. A tailored Research Immersion to focus on the student's special research interests within ethics, including options such as selecting a topic within a clinical specialty (for example, pediatrics, internal medicine, surgery, or psychiatry). Projects may combine empirical and conceptual work with mentorship provided by designated mentors within the ethics, education, policy, and society area of the M.D. program Immersion Phase Inquiry Program. The graduate seminar described above is part of the M.D. Immersion Phase Inquiry Program.
- 3. An apprenticeship with the Clinical Ethics Consult Service, which is offered as an M.D. degree Immersion course. The Ethics Consult Service of the Center for Biomedical Ethics and Society provides formal consultation to VUMC hospitals and conducts a wide range of educational programs in ethics for faculty, staff, fellows, residents, students, and others.

The graduate seminar, the Immersion phase research project, and the Immersion phase consult apprenticeship may be taken separately, but completion of the Certificate in Biomedical Ethics requires successful completion of all three components. More information can be found at *medschool. vanderbilt.edu/certificate-programs/biomedical-ethics/.*

Global Health

The certificate promotes training opportunities in global health. Students in Vanderbilt graduate or professional degree programs who fulfill all requirements are granted a Graduate Certificate in Global Health upon receipt of their degrees. Students in the M.P.H. program's Global Health track are not eligible to receive this certificate.

Certificate Requirements (12 credit hours total)

- 1. Core Course (choose one—additional courses may be taken for elective credit.)
 - Foundations of Global Health
 - Fundamentals of Global Health
 - Essential Skills in Global Health
- 2. Elective Courses—at least 9 credit hours in additional global health course work

• These courses may be a combination of global health courses or other approved courses that have relevance to global health, including a Global Health ISC (3 hours), research immersion (6 hours), or quality improvement project (3-6 hours).

- Students may individually tailor and/or design electives in consultation with faculty mentors. Practicum, thesis, research immersion, and individual learning courses that have relevance to global health may be approved for certificate credit.
- All courses for this certificate must be taken for graduate credit and involve global health content.

To initiate this certificate, submit the "Intent to Enroll" form (*http://is.gd./GCGH_intent_to_enroll*). Note: Your academic adviser or program director must sign this form.

To complete and receive this certificate, submit the Certificate Application (*http://is.gd./GCGH_certificate_approval*). This application should be submitted at least two months prior to graduation.

More information can be found at *medschool.vanderbilt*. *edu/certificate-programs/global-health/.*

Health Equity

3.

4.

The CDC states that "Health equity is achieved when every person has the opportunity to attain his or her full health potential and no one is disadvantaged from achieving this potential because of social position or other socially determined circumstances." (*cdc.gov/chronicdisease/healthequity/ index.htm*) A growing, critical, and specific body of knowledge elucidates the complex underpinnings of health equity, which include both upstream and downstream factors. Socioeconomic (upstream) factors are shaped by the structures, systems, environments, politics, policies, and distribution of money, power, and resources at global, national, and local levels. Individual (downstream) factors include behavior, lifestyle, gender, identity, genetics, family history, and use of/access to health care.

If society is to make progress toward achieving health equity, a cadre of physician leaders must be cultivated that understands these factors and forces, and possesses skills to intervene at the individual, system, and/or community level to impact meaningful change. The VUSM Certificate in Health Equity is offered to doctor of medicine students who wish to deepen their knowledge and expertise in order to embark on leadership careers in this area.

Curriculum

The Certificate in Health Equity requires the following course work (all required courses are offered through the School of Medicine):

- 1. Foundations in Health Equity (FHE) I & II
 - FHE I: Two-week course covering foundational concepts and skills offered twice each year during the second year of medical school.

• FHE II: Monthly evening sessions during Immersion Phase during which students work with faculty facilitators to apply foundational concepts in discussing patients they encounter in health care settings.

- 2. Complete at least two additional courses in health equity and related disciplines. The following courses count toward this requirement:
 - ACE Panel-based Care in a Working-Learning Health System (WLHS)
 - ACE: Population Health in a WLHS
 - ACE Shade Tree Elective
 - ACE: Spanish Language Peds Clinic
 - ACE: Primary Care if taken at community-based locations, such as Siloam, Matthew Walker, and Neighborhood Health
 - ISC: Community Healthcare—Patients, Populations, and Systems of Care
 - ISC: Global Health
 - ISC: Health Systems Science in a Working-Learning Health System
 - ISC: The Opioid Epidemic (in development)
 - AE: Global Health
- 3. Immersion Experience in Health Equity (minimum two months in length):
 - Mentored experience with individualized learning goals
 - May be related to clinical care, research, public health, or community health
 - Students may use required research immersion blocks to satisfy this requirement

• Projects can be used to satisfy Foundations of Healthcare Delivery (FHD) Quality Improvement requirement (requires FHD course director approval)

Doctor of medicine students interested in pursuing the Certificate in Health Equity may learn more at *medschool. vanderbilt.edu/certificate-programs/health-equity.*

Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ) Health

LGBTQ patients experience disparities in access to and quality of care, leading to preventable, adverse health outcomes including elevated risk for specific chronic diseases and increased rates of suicide and depression. The Certificate in LGBTQ Health is designed to teach Vanderbilt doctor of medicine students how to address these disparities, improve the health of LGBTQ patients, support education around LGBTQ health, and foster research on the optimal ways to care for LGBTQ patients and families.

The Certificate in LGBTQ Health comprises three elements:

1. *Research Immersion in LGBTQ Health.* Students select a research topic within the realm of LGBTQ health. This may include selecting a topic within a clinical specialty, for example, adolescent medicine, infectious disease,

psychiatry, or surgery. Projects may combine empirical and conceptual work with mentorship provided by designated mentors.

- 2. LGBTQ Health in Inter-professional Practice or Sex, Sexuality, and Sexual Health Elective. Students choose from one of these two interdisciplinary courses focusing on sexual health in the general population and the specific health care needs of sexual and gender minorities. In addition to the basic sciences underlying the pathophysiology of health in these populations (e.g., HPV infection, HPA dysregulation with chronic stress), clinical specialties highlighted in the course include pediatrics and adolescent medicine, OB/GYN, psychiatry, and internal medicine with content threads from ethics, medico-legal health care, human development, and chronic care.
- 3. *Capstone Project*. Each student completes a capstone project related to LGBTQ health. This may include development of patient education materials, providing a community or staff training, or implementation of a quality improvement project. The capstone is expected to enable students to demonstrate proficiency and acquired knowledge in the area of LGBTQ health.

Each element may be taken separately, but completion of the Certificate in LGBTQ Health requires successful completion of all three elements. More information can be found at *medschool.vanderbilt.edu/certificate-programs/lgbtq-health/*.

Neurodevelopmental Disabilities

The Neurodevelopmental Disabilities (NDD) certificate program provides an opportunity for Vanderbilt doctor of medicine students to receive substantial education and training in the field of neurodevelopmental disabilities. As participants in the Vanderbilt Consortium LEND* program (VCL), medical students work with approximately 30 other students, residents, and fellows from sixteen professions at eight institutions to learn about culturally-sensitive, patient- and family-centered, interprofessional care for children and youth with special health care needs, including autism, intellectual disability, cerebral palsy, learning disabilities, behavior problems, and genetic syndromes that are associated with NDD.

The program provides an intensive (more than 300 hours), two-semester interprofessional training experience which includes:

- Rigorous weekly online core curriculum on NDD with occasional evening classes,
- A monthly evening leadership seminar series,
- Care navigation practicum in which students assist patients and families in navigating the care they receive while learning about social determinants of health and communitybased services,
- Clinical experiences in various interprofessional hospitalbased, community-based, and public health clinics,
- Interprofessional group projects, and
- A broad list of activities from which the trainees can tailor their experiences based on their professional goals and aspirations.

At the completion of this experience, the students will have the requisite knowledge, skills, and attitudes to assume

leadership roles in the field of NDD and to provide interprofessional, patient- and family-centered, community-coordinated, culturally competent, and empirically-based services to individuals with NDD and their families.

Participants receive tuition assistance in the amount of \$7,500. Successful completion of the VCL program also meets the VUMC Foundations for Healthcare Delivery requirement for an interprofessional experience during the Immersion Phase and LC5-LC8 of the VUMC Learning Communities requirements during the Immersion Phase.

Doctor of medicine students interested in pursuing the certificate in neurodevelopmental disabilities may learn more at the VUSM NDD Certificate webpage: medschool.vanderbilt. edu/certificate-programs/neurodevelopmental-disabilities/

*National LEND program website: http://www.aucd.org/template/page.cfm?id=6 Vanderbilt Consortium LEND program website: http://vkc.mc.vanderbilt.edu/vkc/lend/

Archive Medicine Archive Medicine

Courses of Study

The School of Medicine offers the following degree programs: Doctor of Medicine, Doctor of Audiology, Doctor of Medical Physics, Master of Education of the Deaf, Master of Genetic Counseling, Master of Science (Speech-Language Pathology), Master of Science in Medical Physics, Master of Science in Clinical Investigation, Master of Laboratory Investigation, Master of Public Health, and Master of Science (Applied Clinical Informatics). Courses in the School of Medicine are offered in both semester and year-long formats. Courses leading to the M.D. do not carry credit hours; other programs use the traditional credit hour designation.

The university reserves the right to change the arrangement or content of courses, to change texts and other materials used, or to cancel any course on the basis of insufficient enrollment or for any other reason.

DOCTOR OF MEDICINE

Courses leading to the Doctor of Medicine*

*Glossary of Terms available at http://vanderbi.lt/mdcourseglossary

Anesthesiology

ANES 5310. Basic Clinical Anesthesiology. Students will become an integral part of an anesthesia care team model (attending anesthesiologist and resident) at VUMC. Working side-by-side with this care team, students will learn and actively participate in the perioperative management of adult patients presenting for surgical procedures and diagnostic or therapeutic interventions requiring anesthetic care and management. Students will participate in preoperative assessment, risk stratification, development and execution of anesthetic plan (including induction of anesthesia, airway management, maintenance of anesthesia, and emergence), and immediate postoperative care of patients. This rotation will provide a hands-on, continually monitored and mentored experience. At the conclusion of this twoweek elective rotation, students will be able to take and perform a focused anesthesia history and physical, evaluate airway anatomy for ease or difficulty of airway management, and demonstrate valuable skills of mask/bag ventilation, intubation, and LMA placement. Additionally, through designated lectures, assigned textbook, selected journal readings, and hands-on clinical experiences, students will be acquainted with the pharmacology and physiology of anesthetic induction and maintenance agents, neuromuscular blocking drugs, vasoactive substances, local anesthetics, and opioid and non-opioid analgesics. Students will assess and interpret physiologic data from both non-invasive and invasive monitors and explain implementation of interventions to correct physiologic and hemodynamic perturbations.

ANES 5315. Perioperative Neurosciences: The Brains of the Operation. The overall goal of this elective is to have students apply their knowledge of anatomy, physiology, and pharmacology to the presentation and management of common neurological disorders. The students will have dedicated orientation and didactic sessions to review their experience and knowledge. Each will have a set of self-study exercises which will be reviewed with their dedicated mentor. Students will participate as active team members in several settings including the neuro care unit (NCU) and in the operating rooms with the neuro anesthesia and surgical teams. At the end of the two-week rotation, the students will demonstrate a focused history and physical exam of a neurological patient. They will be able to state the pathophysiology of the most common presenting neurological conditions such as raised intracranial pressure, seizures, or strokes including common methods of diagnosis. They will be able to present the patient and, based on their knowledge of CNS physiology, formulate a basic plan for medical or surgical management. In addition, students will understand how the care of these patients (nursing, monitoring, and pharmacology) differs from other medical conditions and the role of each specialty in the care of these patients.

ANES 5610. ACE: Perioperative Medicine and Surgical Home. This course is designed to emphasize the concepts of coordinated perioperative medicine and enhanced recovery after surgery (ERAS). Evidence-based guidelines, optimization/standardization of perioperative care, and multimodal strategies to decrease postoperative morbidities are key components of ERAS. The student will function as integral part of the Perioperative Anesthesia Consult Service and learn fundamental aspects of anesthetic care that maximize perioperative pain control and reduce morbidity and healthcare costs related to cardiac, pulmonary, renal, endocrine, PONV complications or surgical site infections. The student will have an opportunity to be involved in the preoperative, intraoperative, and postoperative management of surgical patients on ERAS pathways.

ANES 5611. ACE: Advanced Clinical Anesthesiology. This ACE will define the role of Anesthesiology as a Perioperative Medicine Specialty in which students will gain broad understanding of the perioperative management of patients across all age groups undergoing surgical procedures. Course content will emphasize the following principles: preoperative assessment, development and execution of an anesthetic plan (including induction of anesthesia, airway management, maintenance of anesthesia, and emergence), and management of acute pain. Students will become an integral part of an anesthesia care team model (attending anesthesiologist and resident). Working side-by-side with this care team, students will learn and actively participate in the anesthetic management of patients presenting for surgical procedures and diagnostic or therapeutic interventions.

ANES 5701. Al: Anesthesiology for OMFS. To be determined.

ANES 6100. Special Clinical Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

ANES 7100. AWAY ACE: Anesthesiology. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

ANES 7150. Special Research Study—Non-VU. Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

Dermatology

DERM 5790. ACE: Clinical Dermatology. This clinical experience will be in the outpatient clinic setting and the inpatient consultation setting with direct faculty interaction. The location of clinic assignments will be in the VU Dermatology Clinic at Vanderbilt One Hundred Oaks and the Dermatology Clinic at the Nashville VA Hospital. There will be participation in weekly conferences specifically for the rotators on the clerkship. The didactic lectures during the month will focus on the identification, treatment, and management of common dermatologic diseases. The clinical experience will reinforce the lectures plus give insight into the role of the dermatologist as a consultant for less common and difficult to treat conditions.

DERM 6100. Special Clinical Study: Dermatology, VU. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

DERM 7100. AWAY ACE: Dermatology. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

Emergency Medicine

EM 5315. Emergency Medicine Elective. This elective will provide a two-week snapshot into the approach to any event or circumstance that threatens loss of life, injury to person or property, or human suffering. Students will be introduced to critical situations in the actual emergency department while learning the important skills required for patient stabilization and assessment. At the conclusion of the elective, students will understand and gain comfort in their future roles as physicians in any emergency situation in or out of the hospital setting. They will understand emergency care while extrapolating their current beliefs regarding emergency care to situations in the hospital setting and in the surrounding community. Students will apply problem-based strategies and teamwork to patient care, using the introductory principles in emergency medicine. They will practice an evidence-based approach and engage in teamwork to enhance their knowledge and skills in treating victims of cardiopulmonary and traumatic emergencies.

EM 5325. Bedside Ultrasonography in the Emergency Medicine Department. Students will be introduced to point-of-care ultrasonography with specific emphasis on its use in the acute care setting. Students will learn about sonography both through web-based resources and videos as well as during weekly didactic sessions. In addition, students will spend several shifts in the Emergency Department each week both observing and performing point-of-care sonography under the guidance of the Director and Assistant Director of Emergency Ultrasound, Emergency Ultrasound Fellows, and Emergency Medicine residents. At the conclusion of the two-week elective rotation, students will be able to describe the appropriate use and application of point-of-care sonography in multiple clinical scenarios. They will be able to recognize normal and pathologic ultrasound images of several core applications. They will acquire the necessary technical skills to operate the ultrasound machine and to obtain images for several important studies including FAST (Focused Assessment with Sonography in Trauma), cardiac, abdominal aorta, renal, and soft tissue.

EM 5330. Prehospital Emergency Medicine: Overview of EMS, Wilderness, Event, and Mass Casualty Emergency Med. In this introduction to prehospital emergency medicine, elective students will experience the full range of EMS—from systems management in the Vanderbilt Communications Center to individual patient care in ambulance ride alongs. Through riding with Nashville Fire paramedics and physician directors, observing medical control calls, participating in quality improvement meetings, and reviewing prehospital medicine landmark literature, students will develop an understanding of the physician role in prehospital medical systems. Didactics and hands-on simulation will also cover disaster, wilderness and event medicine. This course is designed for students interested in emergency medicine and its subspecialties.

EM 5950. ACE: Emergency Medicine. "Is there a doctor on the plane?" Emergencies happen in all specialties and even in life. The 4 week Emergency Medicine ACE will introduce the student to emergency medicine and the initial management strategies for common life threatening emergencies. Students will develop an approach to common undifferentiated patient complaints and a practical skill set in: acid-base emergencies, basic airway management, electrocardiogram interpretation, and electrolyte emergencies. Students will also complete Basic Life Support (BLs) and Advanced Cardiac Life Support (ACLS) training. During the week, there are daily didactic sessions as well as procedure labs and high fidelity simulations. Clinical shifts are spread across a variety of practice settings (adult and pediatrics) and offer a broad exposure. Students work closely with emergency medicine faculty and residents to identify sick patients and develop differential diagnoses and management plans. Students also have the opportunity to participate in procedures and trauma resuscitations. Fulfills the acute care course requirement.

EM 6100. Special Clinical Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

EM 7100. AWAY ACE: Emergency Medicine. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

EM 7150. Special Research Study—Non-VU. Each student arranges an independent study with a mentor and completes a period of research work away Vanderbilt. Approval required.

Family Medicine

FM 7100. AWAY ACE: Family Medicine. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

Interdisciplinary Studies

IDIS 0720. Meharry Medical College Core Clerkship Visiting Experience. Meharry Medical College third-year students participate in a predetermined short-term core clerkship experience.

IDIS 0731. Working-Learning Health System. This course is taken by non-Vanderbilt students participating in the interprofessional workinglearning health system (WLHS) program.

IDIS 5001. CASE—Clinical Application of Scientific Evidence. The research curriculum is a four-year thread. Students will be introduced to a career as a physician-researcher and receive training and hands-on experience in several critical areas of importance to success in research. This will be accomplished through a series of didactic lectures focused on introduction to important skills and traits of physician-researchers, shadowing and interviewing physician-researchers and processing the information to tell a story through a film documentary and related curriculum. First year.

IDIS 5002. Discovery. Students will engage in activities which further develop understanding of research process while supporting exploration of research opportunities that may be pursued during the Immersion Phase. The course begins with an overview of general research areas in which students can participate. Additional course meetings include topics related to mentoring, ethics and professionalism, regulatory training, and scientific communication.

IDIS 5003. Innovation Activism. This course is designed for MD students in the MIDP program, and will blend the engineering strategies of house of quality with voice of the customer to enhance the active observation aspect of innovation acuity. While engaged in the 2nd year clinical clerkships, the students will identify opportunities for innovation in the patient, provider and/or system they observe in the clinic. Students will complete preliminary steps of the design process for projects that will be further developed in the third year MIDP Innovation Design Experience and Application Lab.

IDIS 5015. Interprofessional Continuity Clinic 1: Vanderbilt Program in Interprofessional Learning (VPIL). The Vanderbilt Program in Interprofessional Learning (VPIL) is a longitudinal continuity clinic experience where students work and learn together as members of an interprofessional team. This is the first year of a two-year experience. Medical students accepted into the program are assigned to teams of health professions students earning degrees in advanced practice nursing, pharmacy and social work. The teams work alongside their assigned clinical preceptors in order to deeply understand the many factors-biological, social, psychological, economic and cultural-that impact patient health and wellbeing, as well as system factors that impact how our health care teams and clinics function on a daily basis. The program launches with a week-long summer immersion. Throughout the academic year, student teams work and learn together in clinics, seminars and simulated learning activities. Program goals include: cultivate respectful professionals, nurture self-directed workplace learners, prepare leaders who contribute to a collaborative-practice-ready workforce, integrate the patient care experience with health professions knowledge, and improve the health care delivery system by integrating systems knowledge with patient care. Participation in VPIL allows for medical students to waive credit in specified areas of Foundations of Health Care Delivery (FHD). Specific graduation requirements can be found at https://medschool.vanderbilt.edu/vpil/

IDIS 5016. Interprofessional Continuity Clinic 2: Vanderbilt Program in Interprofessional Learning (VPIL). The Vanderbilt Program in Interprofessional Learning (VPIL) is a longitudinal continuity clinic experience where students work and learn together as members of an interprofessional team. This is the second year of a two-year experience. Medical students accepted into the program are assigned to teams of health professions students earning degrees in advanced practice nursing, pharmacy and social work. The teams work alongside their assigned clinical preceptors in order to deeply understand the many factors-biological, social, psychological, economic and cultural-that impact patient health and wellbeing, as well as system factors that impact how our health care teams and clinics function on a daily basis. Throughout the academic year, student teams work and learn together in clinics, seminars and implement a quality improvement project. They will present their project as part of a Capstone event that completes the program. Program goals include: cultivate respectful professionals, nurture self-directed workplace learners, prepare leaders who contribute to a collaborative-practice-ready workforce, integrate the patient care experience with health professions knowledge, and improve the health care delivery system by integrating systems knowledge with patient care. Participation in VPIL allows for medical students to waive credit in specified areas of Foundations of Health Care Delivery (FHD). Specific graduation requirements can be found at https://medschool.vanderbilt. edu/vpil/

IDIS 5028. Human Blueprint and Architecture. This course is designed to familiarize students with the structures, biomolecules, and processes that constitute life, human health, and disease at the molecular, cellular, and tissue level. Course materials will provide a mechanistic foundation for the medical curriculum that will help equip students with skills necessary to adapt to the practice of medicine in the future. Human Blueprint and Architecture will employ a coordinated and integrated approach to teaching underlying principles of biochemistry, cell and tissue biology, genetics, and pathology with an emphasis on medical conditions. Students also will be introduced to basic principles of anatomy and pharmacology in order to lay foundations for studies on organ systems and disease treatment. In order to provide a broad range of materials and relate molecular and cellular processes to the study of human disease, the course will utilize multiple learning modalities, including large group sessions, case-based learning (CBL) sessions, team-based learning (TBL) sessions, laboratory sessions, and interactive patient-oriented clinical case presentations. The course will be integrated with all other learning activities in the Foundations of Medical Knowledge phase. Required. First year.

IDIS 5032. Microbes and Immunity. This course familiarizes students with the etiology, risk factors, epidemiology, diagnosis, pathogenesis, clinical characteristics, prevention and treatment of common microbial and immune diseases. The course content includes a discussion of the soluble factors and cells that make up the immune system and how these different components contribute to health and disease in a variety of situations. It also provides an overview of the pathogenic bacteria, viruses, fungi, protozoa and parasites. Finally, the course includes several topics that prepare students for the Homeostasis class of the Foundations in Medical Knowledge Phase. The course consists of lectures, case-based small group discussions, case-based intermediate size group discussions, laboratory sessions, and optional problem and review sessions. Required. First year.

IDIS 5033. Learning Communities—Foundations of Medical Knowledge. The Learning Communities FMK course seeks to maximize medical student learning related to student development as professionals. Helping students build an appropriate image of the medical profession and skill set related to functioning within the healthcare environment are the essential foundation for future success. Development as professionals involves knowledge, skills and attitudes related to students' practice as well as the environment within which the practice will occur. The longitudinal nature and trusting environment created within the Learning Communities fosters student professional development, specifically addressing personal areas of metacognition and reasoning, ethics, service, and leadership, as well as the knowledge and understanding of the broader healthcare environment and payment. The academic sessions will be developmentally appropriate as the students mature through the phases, as well as effectively integrated with other course and clerkship efforts. In sum, the Learning Communities will provide the nurturing environs to maximize student development as professionals.

IDIS 5038. Homeostasis. This course is designed to teach students the normal anatomic, molecular, biochemical, and physiologic features of the cardiovascular, pulmonary, renal and blood systems. Course content will provide a framework for an understanding of the pathology and patho-

physiology of diseases that affect these homeostatic systems as well as their diagnosis (laboratory and imaging), and therapy (pharmacologic and nonpharmacologic). A multidisciplinary approach will allow integration of pathobiology, clinical manifestations, and therapy in a comprehensive manner. The course will utilize a variety of teaching modalities that include case-based learning, team-based learning, lectures, laboratory sessions focused on the gross and microscopic anatomy and pathology, and technology-based modalities and simulations. Learning will be in the context of clinical medicine in order to prepare students for the next phase of their education in the clinical setting. The course will be integrated with all other learning activities in the Foundations of Medical Knowledge Phase. Required. First year.

IDIS 5048. Foundations of Health Care Delivery 1: Continuity Clinical Experience. Foundations of Health Care Delivery 1: Continuity Clinical Experience is a longitudinal clinical experience where individual students are integrated into a clinic to learn about the clinical care team, clinic setting, and develop skills to care for individual patients while learning about the larger care-delivery system. Course activities including clinical experiences and seminars will address the following goals: 1. Prepare professionals with systems-level skills necessary to provide care that is safe, effective, patientcentered, timely, efficient, and equitable. 2. Integrate health systems sciences with clinical care. 3. Cultivate respectful professionals.

IDIS 5055. Foundations of the Profession. The goal of this course is to provide students with an understanding of the historical and social context of the practice of medicine. Through assigned readings, lectures, small group discussions and simulations, students will gain an appreciation for the core values and ethical principles that guide the profession's relationship with society and the physician's relationships with patients. They will also explore some of the contemporary challenges facing physicians today, including the need to improve health care disparities, quality, and safety. First year.

IDIS 5058. Endocrine, Digestion, and Reproduction. This course is designed to familiarize students with the normal anatomic, molecular, biochemical, and physiologic features of the endocrine, digestive and reproductive systems. Course content will provide a framework for an understanding of the pathology and pathophysiology of diseases that affect these systems as well as their diagnosis (laboratory and imaging) and therapy (pharmacologic and nonpharmacologic). The role of nutrition in normal homeostasis as well as disease will be included. Pregnancy from implantation to delivery as well as its complications will also be learned. A multidisciplinary approach will allow integration of pathobiology, clinical manifestations, and therapy in a comprehensive manner. The course will utilize a variety of teaching modalities that include case-based learning, team-based learning, patient interviews, lectures, laboratory sessions focused on the gross and microscopic anatomy and pathology, and technology-based modalities and simulations. Clinical context will be emphasized in order to prepare students for the next phase of their education in the clinical setting. The course will be integrated with all other learning activities in the Foundations of Medical Knowledge Phase. Required. First year.

IDIS 5068. Brain, Behavior, and Movement. The Brain, Behavior, and Movement module provides an overview of contemporary neuroscience and introduction to neuropsychiatric disorders. The format of the module includes lectures, lab exercises, small group discussions, and case presentations and discussions. In conjunction with Physical Diagnosis, skills training includes the psychiatric interview and neurological exam. The module emphasizes a basic understanding of the anatomy, physiology, and pharmacology of the central and peripheral nervous systems and the pathophysiological underpinnings of neuropsychiatric disorders. The course provides the foundations of Neurology and Psychiatry. This course is a module within the Foundations of Medical Knowledge Phase. Required. First year.

IDIS 5100. ACE: Primary Care Medicine, VU. All immersion phase students will have a required four-week unit in an ambulatory primary care setting, and this course fulfills that requirement. Students will choose an experience in outpatient pediatrics, internal medicine, family medicine, or internal medicine/pediatrics. Practice sites include ambulatory clinics at Vanderbilt or within the Nashville-area community. The clinic experience

is supplemented by a home visit to follow-up on a patient seen during the ambulatory clinic experience. Assistance with placement is provided.

IDIS 5150. AWAY ACE: Primary Care Medicine. All immersion phase students will have a required four-week unit in an ambulatory primary care setting, and this course fulfills that requirement. Students will choose an experience in outpatient pediatrics, internal medicine, family medicine, or internal medicine/pediatrics. Practice sites include ambulatory medicine or pediatric clinics. Students may arrange a primary care experience outside of Nashville, subject to the approval of the course directors. The clinic experience is supplemented by a home visit to follow-up on a patient seen during the ambulatory clinic experience. Assistance with placement is not provided, and students are also responsible for insuring that proper affiliation agreements are in place for this rotation.

IDIS 5200. MSTP Seminar Series. This elective is open to students in the Medical Scientist Training Program only.

IDIS 5201. Foundations of Biomedical Research I. The major goals of this course for MSTP students in their first year of Medical School are to help them to gain familiarity in reading primary research literature, including utilization of statistical analyses, and to aid the students in selection of a thesis mentor and in understanding of appropriate expectations for both mentor and mentee. These goals will be accomplished in a casual setting through interactions with potential MSTP-eligible faculty and lab members, consultation with faculty advisors, and primary literature discussions. Students will be assessed based upon course participation. Open to students in the Medical Scientist Training Program only. First year.

IDIS 5202. Foundations of Medical Research II. The purpose of this course is to prepare MSTP students for the biomedical research phase of training. The course objective is to develop skills for physician-scientist trainees in critical evaluation of the research literature and formulating high-impact research questions. For second year students the course will be tailored to the individual interests of the students and their research mentors, with particular emphasis on examining scientific papers specific to the students' field of research. Open to students in the Medical Scientist Training Program only. Second year.

IDIS 5215. Foundations of Health Care Delivery 2: Clinical Systems of Care. Foundations of Health Care Delivery 2: Clinical Systems of Care is a course designed to introduce students to the larger health care systems. Students will engage in didactics and experiential learning to develop a deeper understanding of the systems involved in practicing within a mesosystem and macrosystem. Students will learn about social determinants of health and community advocacy, experience a variety of settings of care, learn about safe transitions of care, and optimizing health care value. Through these experiences, students will address the following goals: 1. Prepare professionals with systems-level skills necessary to provide care that is safe, effective, patient-centered, timely, efficient, and equitable. 2. Integrate health systems sciences with clinical care. 3. Cultivate respectful professionals.

IDIS 5220. PLAN. This course introduces students to the basic concepts and principles of research and their application to clinical practice and population health in preparation for their Research Immersion. The course provides the necessary research skills and competencies to develop a basic but complete and structured research proposal for the upcoming Research Immersion experience. The Pathway2PLAN process (completed during the FCC Phase during the Discovery course) is required for admittance into the PLAN course. Approval required.

IDIS 5233. Learning Communities-Foundations of Clinical Care. The Learning Communities FCC course integrates with the student's clerkship experiences and builds on the students' experiences Learning Communities FMK. Prior efforts addressed important professional development topics such as metacognition, clinical reasoning, ethics, leadership, and healthcare delivery. The Learning Communities FCC course connects these theoretical concepts and discussions with the practical and experiential learning of the students during their clerkship rotations. Students meet in College-based groups for discussion and reflection with the College Mentors, as well as in clerkship-based groups with ethics faculty for deeper exploration of ethical issues specific to each clerkship. In sum, the Learning Communities FCC course will continue to provide nurturing environs to enhance student

development as professionals by allowing for the exploration of the practical application of previously learned concepts.

IDIS 5310. CiM Multi-Specialty Elective. Throughout this two-week elective, students will shadow attending and resident physicians of their choosing in various specialties and subspecialties. The purpose of the course is to introduce students to various fields of medicine in an effort to aid in their specialty selection in the fourth year of medical school. A list of attending physicians in various specialties will be provided by the Student Representatives of Careers in Medicine (CiM). Enrolled students will be responsible for contacting physicians and scheduling their shadowing experiences over the two-week period. Two weeks prior to the beginning of the elective, a meeting with the course director(s) will outline the process for scheduling these experiences and expectations for the elective. Shadowing experiences with faculty members outside the CiM-provided list may be arranged with prior approval from the course director. At the end of the elective, students will participate in a professional development workshop and an individual exit counseling session with the Assoc. Dean for Medical Student Affairs to discuss their clinical experiences and their progress towards choosing a specialty. Students will schedule shadowing experiences for nine days of the elective and attend the professional development workshop and the exit counseling session. Shadowing of one physician is limited to a maximum of three days. Enrolled students will submit their shadowing schedule to the course director(s) prior to the start of the elective for approval. The professional development workshop will address topics such as CV writing and public speaking. At the conclusion of the two-week rotation, students will be familiar with the schedules, daily activities, patient populations, and consultations in several specialties. The shadowing experience and exit counseling session with the Assoc. Dean for Medical Student Affairs will provide students with information that will aid their specialty selection and CV. [0]

IDIS 5314. Critical Thinking and Logic in Medicine. Critical Thinking, logic and reasoning play a fundamental role in everyday patient care as well as research design, interpretation and application. While development and application of evidence based medicine is crucial to advancement of all aspects of clinical practices, it is of little significance without sound critical thinking and logic reasoning. Students will join anesthesiologists and/or Intensivists in the operating rooms and ICU from 7:30 to 12:00 every other day throughout the elective period. Didactics about the principals of critical thinking in medical practice and other similar high intensity environments will be offered in form of lectures, discussion groups and simulations. Pre acquired knowledge in the field of anesthesia and critical care is not required. Problem solving skills development will be based on concept of critical thinking and asking the right guestions. Resources to acquire needed knowledge to apply in problem solving will be provided to students and will consist mainly electronic resources available on the internet and intranet followed by physicians practicing in the respective fields. At the conclusion of the two-week elective rotation, students will be able describe and apply principals of critical thinking and reasoning to patient care. Application of logic and reasoning to individual patient care as well as generating the relevant hypothesis on which future literature search and study design should answer. While problems in anesthesiology and critical care will serve as examples, the understanding, concepts and resources will be generalizable to all fields of medicine. Objective pre- and post-course evaluation will given to track learning and help in improving the course for future students. A subjective evaluation will also be collected from each student. Students will receive feedback at the end of each clinical exposure (2 days) on the elective and at the conclusion of the post-course evaluation. The course will be graded on a pass/fail basis. Students should report to MCE 3161 on their first day.

IDIS 5316. Medicine and Media. As the interest in science and medical news grows and more media outlets exist to report and analyze such news, the need will increase for medical professionals who are skillful at using media of all types to convey information. An understanding of various facets of how science and medical news are produced and reach the public may be gained through working with Vanderbilt communications professionals engaged in reaching the public with such news. Students in this elective will join various units of Vanderbilt's Communications team, both as observers and participants, in order to learn some of the fundamentals of medical and health communications at a major academic medical center. These opportunities will include, but not be limited to, local and

national media relations; getting hands-on experience with medical journalism by researching and writing a press release or a story for the VUMC Reporter or other Medical Center publications; working with the social media team to learn about the uses of media such as Facebook and Twitter to convey news, as well as health and wellness information; working with the Division's web team to learn about the presentation of news and information via the web; receiving a more institution-wide perspective by working with the editors of Research@Vanderbilt, our website devoted to research news; and working with VUMC faculty who are frequently called on by the press to convey health information to the public. The students will also be assigned readings and viewings that provide context to the daily hands-on experience. At the conclusion of the two-week elective, students will be able to interview one or more sources and write a publishable news story on biomedical research or a health topic; understand the daily interactions between the local and national media and a medical center such as Vanderbilt that seek to influence both public health and its national reputation via media relations; and understand the key role of social media in the modern media environment. Students will also have the opportunity to become more skilled at being interviewed and accurately conveying information, even in a challenging environment. Additionally, the students will have an understanding of some of the key differences in professional assumptions between media professionals and science professionals.

IDIS 5327. Adult Communication Disorders. This two-week elective will offer students an opportunity to focus on adult communication disorders. Students will be provided didactic coursework in the relevant areas and will observe and, when appropriate, participate in surgical, medical, and clinical care of affected patients. Students will join an interdisciplinary team of clinicians, scientists, and physicians to serve and investigate adult patients who exhibit acquired communication or vestibular disorders as a result of damage to the central or peripheral nervous system. Acquired neurogenic disorders commonly are associated with stroke, dementia, Parkinson's disease, Lou Gehrig's disease, tumor, and traumatic brain injury, which result in aphasia, dysarthria, and apraxia of speech. The most commonly diagnosed vestibular disorders include benign paroxysmal positional vertigo (BPPV), labyrinthitis or vestibular neuritis, Meniere's disease, secondary endolymphatic hydrops, and perilymph fistula, which result in a range of difficulties including vestibular disturbance and difficulties with balance and falls. Students will spend a portion of their time with the Neurogenics Team and a portion of their time with the Vestibular Team. Care providers from the departments of Hearing and Speech Sciences, Neurology, Physical Medicine and Rehabilitation, Trauma, and Otolaryngology will participate in this elective.

IDIS 5329. Pediatric Communication Disorders. This two-week elective will offer students an opportunity to focus on pediatric communication disorders. Students will be provided didactic coursework in the relevant areas and will observe and, when appropriate, participate in surgical, medical, and clinical care of affected patients. Students will join an interdisciplinary team to serve and investigate pediatric patients who exhibit hearing loss, dysphagia (a feeding and swallowing disorder), or Autism Spectrum Disorder (ASD). ASD includes Autism, Pervasive Developmental Disorder, not otherwise specified and is characterized by a disturbance of normal neural organization and connection resulting in impaired social interaction and communication. Students will spend a portion of their time with the cochlear implant and hearing aid teams, a portion of their time with the dysphagia team, and a portion of their time with the ASD team. The Hearing Loss Team will consist of audiologists, surgeons, speech-language pathologists, and a number of other individuals who work with these children. Clinical and surgical observations will take place in various clinics within the Bill Wilkerson Center and in the Otolaryngology Clinic at Children's Hospital. The Dysphagia Team will consist of otolaryngologists and speech-language pathologists, and a number of other professionals who work with these children. Clinical and surgical observations will occur within the Complex AeroDigestive Evaluation Team (CADET) Clinic. The ASD Team will consist of care providers and scientists from the departments of Psychiatry, Psychology, Developmental Pediatrics, Hearing and Speech Sciences, Neuroscience, and a number of other individuals working with these children.

IDIS 5330. Critical Thinking and Logic in Medicine. Critical Thinking, logic and reasoning play a fundamental role in everyday patient care as well as research design, interpretation and application. While development and application of evidence based medicine is crucial to advancement

of all aspects of clinical practices, it is of little significance without sound critical thinking and logic reasoning. Students will join anesthesiologists and/or Intensivists in the operating rooms and ICU from 7:30 to 12:00 every other day throughout the elective period. Didactics about the principals of critical thinking in medical practice and other similar high intensity environments will be offered in form of lectures, discussion groups and simulations. Pre acquired knowledge in the field of anesthesia and critical care is Not required. Problem solving skills development will be based on concept of critical thinking and asking the right questions. Resources to acquire needed knowledge to apply in problem solving will be provided to students and will consist mainly electronic resources available on the internet and intranet followed by physicians practicing in the respective fields. At the conclusion of the two-week elective rotation, students will be able describe and apply principals of critical thinking and reasoning to patient care. Application of logic and reasoning to individual patient care as well as generating the relevant hypothesis on which future literature search and study design should answer. While problems in anesthesiology and critical care will serve as examples, the understanding, concepts and resources will be generalizable to all fields of medicine Objective pre and post course evaluation will be given to track learning and help in improving the course for future students. A subjective evaluation will also be collected from each student. Students will receive feedback at the end of each clinical exposure (2 days) on the elective and at the conclusion of the post-course evaluation. The course will be graded on a pass/fail basis. Students should report to MCE 3161 on the first day. [0]

IDIS 5335. Aerospace Medicine Elective, USAF. This course provides an overview of flight and operational medicine introducing students to unique patient populations and occupational exposures. Field experiences include visits to a fire station, hypobaric chamber, and an incentive flight. Students will visit the National Museum of the U.S. Air Force, exploring past and present airframes in the USAF inventory. Finally, an outdoor mass casualty triage exercise will be conducted at the National Center for Medical Readiness at Calamityville.

IDIS 5340. Introduction to Business of Medicine. This elective rotation is designed to give a medical student an introduction the business aspects of healthcare. The goal of this course is to have students begin to get an appreciation of how modern healthcare and business intersect. Whether in a small single provider clinic or a large academic medical center, core business principles are used to manage and deliver quality healthcare. Specifically, this rotation will focus on the business principles of: healthcare economics, operations, leadership, strategy, and finance. We will use a combination of didactic lectures, outside reading, and direct mentor shadowing to give students exposure to these business topics. By the end of the rotation, a student should be able to: describe key concepts within each of the five business topics, discuss specific examples of how these topics are applied in the delivery of healthcare, and have a basic understand of government insurance products and policies, and how they relate to healthcare delivery.

IDIS 5500. USMLE Step 1 Independent Study. This course requires students to undertake a two-month period of independent study for Step 1 of the United States Medical Licensing Exam. This course is required prior to advancing into Immersion phase requirements.

IDIS 5610. AE: Med School 101. Students will develop and conduct "Med School 101," a 3-week course for gifted high school students as part of Vanderbilt University's Program for Talented Youth (PTY). The course begins early in the spring semester, when third-year students can participate in optional training at the Center for Teaching. Later in the spring, under the direction of the Senior Associate Dean for Health Sciences Education, students create a curricular plan, develop teaching sessions and arrange for other teaching sessions and clinical experiences. Finally, students implement the course during the first full three weeks in July.

IDIS 5613. ISC: Critical Illness. Regardless of a student's individual specialty choice, each will be called upon to provide competent care for critically ill patients during their residency training. The successful management of critically ill or injured patients requires a thorough understanding of physiology, pathophysiology, and pharmacology. By combining targeted teaching with hands-on experiences in different ICUs across the medical center, Critical Illness will deepen knowledge of the anatomy, physiology,

pathophysiology, imaging, biostatistics, ethics, microbiology, neuroscience, nutrition science, pharmacology, and behavioral medicine inherent in critically ill patients. In the first week, all students will be immersed in Critical Care Skills Week, a highly regarded simulation-based learning experience that culminates in receipt of Fundamentals of Critical Care Support (FCCS) certification. All students will spend a week caring for patients in the Medical, Surgical, Burn, Neurologic, Cardiovascular, or Pediatric ICU. The other 2 weeks will be spent in learner-focused case-based education facilitated by ICU faculty, ICU radiology and palliative care sessions, additional patient-centered experiential learning opportunities and hands-on workshops in ICU-specific technical skills such as airway management, ventilator manipulation, and chest tube placement. Fulfills the acute care course requirement.

IDIS 5614. ISC: Community Healthcare—Patients, Populations and Systems of Care. In Community Healthcare, students will be equipped to effectively address predictors of poor health on an individual level, and to engage healthcare systems in ways that promote meaningful change. Students will move beyond an investigation of the social determinants of health to provide individualized patient care and engage the healthcare system. Regardless of the field students decide to enter, they will encounter vulnerable populations of patients and should be equipped to address patient needs in ways that promote healing. Foundational science topics will include population health, health policy, health determinants, community engagement, systems engineering, public health, organizational management, health ethics, resource utilization, implementation science, behavioral science, and communication science. The course is comprised of clinical experience in a safety net clinic, seminar sessions with local and national experts to facilitate skill development, two projects with presentations that integrate core concepts, and journal club participation with a presentation. The course will equip students with a "portable toolkit" of skills that can be used in any field of practice in any location. This course qualifies for primary care credit.

IDIS 5618. ISC: Global Health. In this international clinical rotation, students have a unique opportunity to gain a deep understanding of diseases in resource-constrained settings through the lens of population science, epidemiology, public health, health systems, health policy, and other issues related to international development. Students spend the entirety of the course at one of Vanderbilt's partner sites in locations around the world, including but not limited to Guatemala, Jordan, Kenya, and Peru (students may also propose an alternative site). Clinical sites range from urban teaching hospitals to rural clinics and often include associated community health outreach programs. Once on-site, students participate in a variety of rotations ranging from one to four weeks that are designed based on both the student's interests and the mentorship and resources available at the site. During the rotation, students complete weekly online modules that introduce key concepts in global health and related foundational sciences. Foundational science topics include population health science, public health, pathology and pathophysiology (for both infectious diseases and non-communicable diseases), nutrition science, epidemiology, and health systems sciences (other foundational science areas could be covered depending on the site). The course is taught through interactive digital lectures; readings from peer-reviewed journals; on-site exposures to patients, health systems, and communities; and distance mentoring sessions with Vanderbilt faculty. In the month prior to departure, students complete online pre-departure modules as well as attend two pre-departure orientation sessions to prepare for immersion. Students have the opportunity to hone foreign language skills and to develop lasting partnerships in a cross-cultural setting with our international colleagues.

IDIS 5620. ISC: Clinical Cancer Medicine. Cancer is the second leading cause of death worldwide, accounting for 8.8 million deaths in 2015. The World Health Organization estimates that the number of new cancer cases and cancer deaths will increase by 50% and 60%, respectively, within the next 20 years. Although in the United States, the overall cancer death rate has declined, the number of cancer survivors has increased and is expected to rise to 19 million people by 2024. Physicians practicing in any specialty can expect to care for patients, with significant co-morbidities, who have cancer or are cancer survivors. As a result, all medical students should understand the basic mechanisms driving the most common cancers, relevant treatment strategies, treatment toxicities, and outcomes. Since it is

estimated that 30-50% of all cancer cases are preventable, all physicians should also understand evidence-based cancer prevention strategies. This course will provide a unique educational opportunity where medical and graduate students work together to explore the foundational principles of cancer biology and how that information is leveraged for personalized patient care. Foundational science topics are broad and include anatomy, physiology, histology, biochemistry, cell biology, genetics, molecular biology, immunology, pathology, radiobiology, and toxicology. Students will actively participate in (medical) or observe (graduate) the multidisciplinary approach necessary for the optimal care of cancer patients through clinical experiences and tumor board meetings. The small class size allows us to tailor integrated clinical experiences with student professional preferences and/or goals. Students will also gain an understanding of patient expectations and the importance of a broad fund of knowledge in addressing complex clinical problems.

IDIS 5621. ISC: Cardiovascular Disease. The course will expose the student to a broad range of cardiovascular diseases, focusing on foundational science as well as clinical topics that are applicable to students going into any specialty in which they will care for patients with cardiovascular diseases. Foundational science topics will include cardiovascular physiology and hemodynamics, electrophysiology, anatomy, histology, and pharmacology. All students will participate in a core series of didactics and workshops, but will be allowed to choose clinical experiences in cardiology, cardiothoracic surgery, vascular surgery, and cardiothoracic anesthesia. Clinical care will occur in a variety of settings including the wards, intensive care unit, operating room, outpatient clinics, and diagnostic laboratories. The course will provide flexibility to allow the interested student to have experiences in at least two clinical specialties. In addition, the curriculum is designed to encourage teamwork and knowledge sharing through interactive conferences and work groups.

IDIS 5622. ISC: The Skinny on Obesity-What Every Physician **Should Know.** Rates of obesity are rising all around the world and, as physicians we confront it daily regardless of our specialty. Whether clinicians or surgeons, general practitioners or specialists, pediatricians or internists, researchers, educators, administrators, public health professionals and even in our own families and circles of friends, the issue of obesity will be a near daily encounter. For most of us, obesity management will not be the primary focus of our job, but we can still play a key role in the prevention and care of unhealthy weight and its comorbidities. This course is designed for 3rd and 4th year medical students in an immersion format, combining mentored clinical experiences with additional organized learning opportunities. It is four weeks in length, offered at 5 points during the academic year, and incorporates up to eight students in each offering. In this course students will have the opportunity to prepare for how they can effectively address obesity in their anticipated area of practice. They will have the opportunity to participate in a variety of interdisciplinary patient care settings, which range from general to subspecialty, from medical to surgical, and from clinical to research to community. Through these clinical experiences and additional learning activities, students reinforce their knowledge of this disease, build skills in its management, and contribute to the prevention and treatment of obesity.

IDIS 5623. ISC: Getting Hooked-Addiction. Addiction is a highly prevalent, chronic brain disease that affects nearly every organ system in the body. A leading cause of morbidity and mortality, addiction is preventable and treatable, but only about 10% of those affected receive appropriate treatment. Patients with problems related to addiction may present for care in any setting across the health care system. It is therefore essential for all physicians to be well versed in the basic principles of addiction medicine. This 4-week course will be an opportunity to synthesize the neuroscience of addiction with clinical skills in assessment and treatment of addictive disorders. The primary goals of the course are to train future physicians: to recognize addiction as a chronic brain disorder; to effectively screen for substance use disorders in varied clinical settings; to treat or refer patients for specialized treatment as indicated; and to consistently approach patients with addiction with compassion and respect. In addition, this course serves as an opportunity to return to the foundational medical knowledge underlying the pathophysiology and treatment of addictive disorders and integrate this knowledge with clinical care. Key concepts of foundational medical knowledge will be reviewed including neuroanatomy,

mechanisms of neurotransmission, pharmacology, epidemiology, and cell biology as they relate to addiction medicine. Students will use online modules and independent study for instruction on foundational medical knowledge and in-class time will be focused on discussion and integration of the material with clinical experience.

IDIS 5624. ISC: Diabetes Mellitus. Diabetes mellitus is a worldwide pandemic. One in twelve United States adults now suffers from the disease, and in the near future this number will likely increase to one in ten. Physicians in any specialty/subspecialty can expect to care for patients with diabetes, especially because patients with diabetes have higher rates of hospitalization, surgical complications, cardiovascular disease, infection and other morbidities. Therefore most, if not all, physicians in training should be competent in basic treatment of diabetes in the inpatient and outpatient settings and understand the current and future areas of research and medical practice as related to diabetes. This course is designed to teach our medical students how to care for the patient with diabetes mellitus, regardless of their specialty of choice, as well as to understand the basic science, social effects, bearing on public health, and human impact of this disease. Additionally, biomedical research in diabetes involves many fields of research such as cardiovascular disease, physiology, molecular biology, genetic medicine, cell biology, and neuroendocrinology. As a medical center whose goal is to train future researchers and leaders in medicine, Vanderbilt must offer experiences in diabetes patient care and research to its students. This immersion will include components of clinical training as well as an academic project exploring the limits of current scientific knowledge about diabetes care and treatment.

IDIS 5625. ISC: Clinically Applied Immunology. The human immune system impacts every subspecialty in medicine. An understanding of normal and pathologic immunity is critical for physicians to provide the highest quality patient care. This Integrated Science Course (ISC) teaches immunology in a highly clinically applied manner using a variety of topics and subspecialties. Areas of clinical focus include autoimmune diseases, food and drug allergy, opportunistic infections, transplantation, and commonly encountered medications used for suppressing the immune system. Opportunity exists for deeper clinical dives into each of these areas. During the course, students spend time in a variety of clinical settings tailored in part to meet their specific clinical interests. Clinical engagement during the ISC occurs in a variety of areas including allergy/immunology, gasteroenterology/inflammatory bowel disease, infectious diseases, dermatology, rheumatology, and solid organ/stem cell transplantation. The course employs a variety of learning formats including didactic lectures, team-based learning, journal club and case discussions, and online learning modules to fulfill learning objectives focused on understanding the clinical applications and relevance of immune-related diseases.

IDIS 5626. ISC: Medical Imaging and Anatomy. Imaging is an essential component of the diagnosis and treatment of disease across all fields of medicine. Every physician interacts with medical imaging both in emergent and non-emergent settings. Therefore, each student requires knowledge of the utility, indications, acquisition, interpretation, limitations, and risks of medical imaging. Furthermore, it is crucial that physicians understand how imaging affects patient care and management and how it fits into the larger healthcare delivery system. This course will strengthen and expand upon prior learning in anatomy, embryology, pathophysiology, and neuroscience, and introduce students to radiobiology and radiation effects, imaging physics, imaging ethics, and radiologic pharmacology. The course will consist of "general" components for all students and "selective" components in one of the following: Chest & Body Imaging, Musculoskeletal Imaging, or Neuroimaging. Opportunities to individualize the course include gross anatomy lab, reading room experience, and student presentations. Self-paced recorded lectures and modules will accompany live lectures, small group discussions, and clinical exposure to medical imaging in Diagnostic and Interventional Radiology. Additionally, students will get hands-on experience in basic ultrasound scanning technique. After this course, students will feel confident with key anatomy, be able to make "do-not-miss" imaging diagnoses, and be able to use imaging more safely and appropriately.

IDIS 5627. ISC: Injury, Repair, and Rehabilitation. In the US, injuries are the leading cause of death among persons ages 1-44 years of age,

which results in more deaths than non-communicable diseases and infectious diseases combined. In this course, students will be exposed to the continuum of injury, repair, regeneration, and rehabilitation through the multidisciplinary viewpoints of emergency medicine, trauma surgery and associated surgical subspecialties, such as anesthesia, hematology & transfusion medicine, physical & occupational therapy and speech-language pathology. Students will spend portions of their clinical experience on the trauma service supplemented by rotations through rehabilitative, recovery, and palliation settings. Didactics will focus on shock, hemostasis and thrombosis, wound healing and regeneration of skin, bone and nerves, nutrition, acute and chronic pain management, speech-language pathology, age and co-morbid factors, brain injury, case-based learning across the continuum from acute to long-term recovery, as well as palliative care and death. Integrated foundational sciences are anatomy, epidemiology, ethics, immunology, implementation science, neuroscience, nutrition sciences, pathology, pathophysiology, pharmacology, radiobiology, social sciences, system sciences. Following experiential anatomic learning and practice, successful students will obtain four-year American College of Surgeons Advanced Trauma Life Support (ATLS) certification (except in section 6, when students will audit the ATLS course but not receive certification), as well as audit the Advanced Surgical Skills Exposure for Trauma (ASSET); both courses are coordinated using the facilities of the Program for Advanced Anatomy and Simulated Skills (PASS) and the Center for Experiential Learning and Assessment (CELA). This course will serve as a prerequisite to the Advanced Clinical Experience in Trauma.

IDIS 5628. ISC: Infectious Diseases. A WHO report warns that infectious diseases are spreading more rapidly than ever before and that new infectious diseases are being discovered at a higher rate than at any time in history. This elective is for students with an interest in learning more about how to diagnose and treat patients with infectious disease. Students will also learn how to use antibiotics appropriately and manage the complications of HIV and other chronic infections. The diversity of patient population will afford the student a breadth of experience in evaluating and managing patients with infectious diseases. In this clinic-driven experience, students are placed in a series of 3 week-long clinical experiences in various settings including inpatient, outpatient and laboratory medicine and are introduced to key topics and concepts in infectious diseases including symptoms, diagnosis, treatment, vaccines, and antibiotic stewardship. Methods to establish an etiologic diagnosis and rational use of antibiotics are emphasized. Foundational science topics include Epidemiology, Immunology, Microbiology, Virology, Pathology and Pathophysiology. The course is taught through online modules/lectures, clinic exposures to patients, team-based learning, and case presentations.

IDIS 5629. ISC: Sexual Health and Medicine. This course will vastly deepen students' knowledge of sexual medicine and reproduction, focusing on the foundational science as well as clinical experiences that will provide students with the knowledge they need to care for patients of all ages. Students will pursue these topics far deeper than what is taught in second year clinical clerkships. Foundational science topics will be addressed in a series of team based learning activities that will integrate foundational science with relevant clinical experience. This course will integrate the anatomy, physiology, pathophysiology and pharmacology of sexual function and reproduction with the clinical skills necessary to interview and assess patients in these areas of medicine. Students will become familiar with a core set foundational published literature and pursue one area more deeply leading to a brief paper. At the completion of this course, students will thoroughly understand the mechanisms of sexual function and reproduction and should be able to assess sexual development, sexual dysfunction, and fertility and to develop an appropriate and sensitive treatment plan. Students should be able to approach patients about the sensitive topics of sexual health, function, identify and reproduction with knowledge, compassion and cultural sensitivity

IDIS 5630. ISC: Healthy Aging and Quality Dying. Regardless of specialty choice, all physicians will encounter aging and death among their patients, family members, and selves. In the Healthy Aging and Quality Dying ISC, students will take care of both aging and dying patients in a variety of settings ranging from inpatient geriatric wards, outpatient geriatrics primary care clinics, nursing homes and assisted living facilities, and selected subspecialty settings. Didactics will delve into the foundational

sciences of the epidemiology of aging, the physiology of aging and its clinical implications (e.g., falls, delirium and cognitive impairment, immune senescence, drug selection/dosing), communication skills, ethics at the end of life, systems-based care, and behavioral sciences in order to answer meaningful clinical questions. By expanding knowledge in these foundational sciences through small group discussions, case studies, and simulation exercises, students will be better equipped to slow down the aging process of their patients, prevent iatrogenic events in older adults, and improve quality of life based on what is most important to their patients.

IDIS 5631. ISC: Emergency Care: Cell to System Science. Regardless of one's chosen specialty, all physicians interact with the emergency department (ED)-maybe as a specialist on call or as a primary physician referring patients to the ED. The Emergency Care ISC will bring you from the cellular level to the system level. By delving into core pharmacologic principles you will develop an approach to the care of an acutely poisoned patient. Through task trainers and cadaver based procedure labs you will deepen your knowledge of procedural anatomy and perform emergency and resuscitative procedures. Additionally, by learning the physics of ultrasound, you will be able to enhance your musculoskeletal exams and perform ultrasound guided procedures while analyzing the cost and safety benefits of point of care ultrasound. All physicians need to work as part of a team. The ability to lead and function in a team is even more essential in high-stakes situations, such as managing a mass casualty incident. You will explore the core concepts of teamwork and apply them to the evaluation of acutely ill or injured patients. Finally, the ISC will deepen your understanding of systems of emergency care and the role of the ED in the healthcare system and the hospital. Students will have the opportunity to observe at the Vanderbilt Communications Center, ride on Nashville Fire ambulances, work shifts in the adult and pediatric emergency departments, perform bedside ultrasounds on ED patients during dedicated ultrasound scanning shifts, and participate in multiple simulation experiences. This course meets the acute care requirement.

IDIS 5632. ISC: Health Systems Science in a Working-Learning Health System. In this course interprofessional student teams participating in a working-learning health system (WLHS) will gain experience managing a high risk, complex panel of patients while advancing knowledge in health systems science, social and behavioral determinants of health, and continuous quality improvement. In the WLHS student teams provide comprehensive longitudinal care to a patient panel through direct care and care navigation across multiple settings, including clinic visits, communicating with inpatient services if the patient is admitted, home visits, work or school visits, and ER visits (during daytime hours). Each patient will have a care plan that will guide the care that the team provides. Depending on the needs of the patient, the team will conduct care navigation by contacting the patient approximately every four weeks to check on the status of the patient and determine if the team can help facilitate services to the patient. Teams will conduct ongoing quality improvement measurements to ensure that the care being provided is having a positive impact on patients. Formal coursework topics will include health systems science and the health care system, socio-ecologic and structural determinants of health, health policy and health economics, organizational management, public health, quality improvement processes, and interprofessional practice. Students from Medicine, Nursing, Pharmacy, Physician Assistant, and/or Social Work will be members of the student team. Students will work at the Clinic at Mercury Courts. This course meets the primary care requirement. We believe that this innovative approach to workplace-based learning will enable interprofessional student teams to positively impact the health of their patients while decreasing resource utilization. This course is the first in a series of three courses that students can complete in the working-learning health system. The second rotation in the WLHS series is the ACE in Population Health in a Working-Learning Health System.

IDIS 5633. Learning Communities IMM. The Learning Communities-Immersion course builds on prior efforts addressing student professional development that occurring in earlier Learning Communities courses. Students continue to explore vital issues of their development as professionals with further readings and small group discussions within the nurturing College environment. The sessions are designed in a developmentally appropriate manner to maximize discussions and learning based on the clinical experiences of the students. The Learning Communities-IMM course provides the environment for students to focus on further honing their own skill sets regarding ethics, cognition and leadership prior to graduation and the beginning of residency training.

IDIS 5640. ACE: Population Health in a Working-Learning Health System. This course is the second in a series of courses that students can complete in the three-course working-learning health system (WLHS) series. The clinical experience is similar to the clinical experience in the ISC in Health Systems Science so students have additional opportunities for longitudinal patient care. In addition, students who complete this ACE may be eligible for QI advanced track credit (FHD requirement). Interprofessional student teams in the WLHS will continue to gain experience managing high risk, complex panels of patients while advancing knowledge in health systems science, social and behavioral determinants of health, and continuous quality improvement. In the WLHS student teams provide comprehensive longitudinal care to patient panels through direct care and care navigation across multiple settings, including clinic visits, communicating with inpatient services if the patient is admitted, home visits, work or school visits, and ER visits (during daytime hours). Each patient will have a care plan that will guide the care that the team provides. Depending on the needs of the patient, the team will conduct care navigation by contacting the patient approximately every one to two weeks to check on the status of the patient and determine if the team can help facilitate services to the patient. Teams will conduct ongoing quality improvement measurements to ensure that the care being provided is having a positive impact on patients. Formal coursework topics include population health, public and community health, epidemiology, community resources for patients and families, socio-ecologic and structural determinants of health, quality improvement processes, and interprofessional practice. Students from Medicine, Nursing, Pharmacy and/or Social Work will be members of the student team. With approval from the course director, students can choose to work in one of four health systems, including two adult clinics (Mercury Courts and Familiar Faces) and two pediatric clinics (General Pediatrics and Pediatric Pulmonary Medicine). We believe that this innovative approach to workplace-based learning will enable interprofessional student teams to positively impact the health of their patients while decreasing resource utilization. The third and final course in this series is the ACE in Panel-based Care in a Working-Learning Health System.

IDIS 5641. ACE: Panel-based Care in a Working-Learning Health System. This course is the third and final that students can complete in the working-learning health system (WLHS) series, and the clinical experience is similar to the clinical experience in the ISC in Health Systems Science so students have the best opportunity for optimal longitudinal patient care. In addition, students who complete this ACE are eligible for QI advanced track credit (FHD requirement). As in the preceding two courses, interprofessional student teams in the WLHS will continue to gain experience managing high risk, complex panels of patients while advancing knowledge in health systems science, social and behavioral determinants of health, and continuous guality improvement. In the WLHS student teams provide comprehensive longitudinal care to patient panels through direct care and care navigation across multiple settings, including clinic visits, communicating with inpatient services if the patient is admitted, home visits, work or school visits, and ER visits (during daytime hours). Each patient will have a care plan that will guide the care that the team provides. Depending on the needs of the patient, the team will conduct care navigation by contacting the patient approximately every one to two weeks to check on the status of the patient and determine if the team can help facilitate services to the patient. Teams will conduct ongoing quality improvement measurements to ensure that the care being provided is having a positive impact on patients. Formal coursework topics will include panel-based care, advanced topics in clinical medicine and pathophysiology, leadership[skills, socio-ecologic and structural determinants of health, quality improvement processes, and interprofessional practice. Students in this course will also be able to customize the curriculum to meet their individual goals and interest in the field of workinglearning health systems. Students from Medicine, Nursing, Pharmacy and/ or Social Work will be members of the student team. With approval from the course director, students can choose to work in one of four health systems, including two adult clinics (Mercury Courts and Familiar Faces) and two pediatric clinics (General Pediatrics and Pediatric Pulmonary Medicine).

We believe that this innovative approach to workplace-based learning will enable interprofessional student teams to positively impact the health of their patients while decreasing resource utilization.

IDIS 5651. Learning Communities IMM Unit 1: Applied Ethics. Medical errors threaten the moral sense of self of the physician. All physicians commit errors, some of them costly in terms of increased patient morbidity and mortality while others are just nagging reminders of our professional limitations. Learning how to respond to one's own errors in responsible and healthy ways, and considering how to best provide leadership through our response to others' errors are important in practicing medicine successfully and maintaining one's ethical equilibrium. This session will explore the ethical challenges and implications in addressing this developmentally important issue for becoming mature practitioners of medicine.

IDIS 5652. Learning Communities IMM Unit 2: Lifelong Learning. Change is ubiquitous in healthcare making continuous adaptation necessary for clinicians to provide the best possible care to their patients. Developing the capabilities of a Master Adaptive Learner will provide future physicians with strategies for learning in the healthcare environment and for managing change more effectively. The concept of a Master Adaptive Learner combines adaptive expertise with an approach to learning based on self-regulation. Learners will explore an evidence-based model for the Master Adaptive Learner that provides a shared language and scaffolding to facilitate exploration and conversation about both successes and struggles during the learning process.

IDIS 5653. Learning Communities IMM Unit 3: Situation Leadership and Diagnosing. All leadership situations are not equal. Trying to lead all followers in every situation in the same manner does not demonstrate effective leadership. Being able to target leadership style to the developmental level of the follower(s) improves the productivity of the follower(s) while also eliminating frustration for all involved. This session will allow students to explore concepts related to the Situational Leadership II model and its application.

IDIS 5654. Learning Communities IMM Unit 4: Problem Solving. Physicians and leaders are both routinely called upon to solve difficult problems. The best physicians and leaders are able to move past the "easy" solutions to the "right" solutions. In this session, students will explore different approaches to problem solving and their importance to physicians and leaders alike.

IDIS 5655. Learning Communities IMM Unit 5: Priority Setting. Highly effective leaders are able to focus their energy and efforts on selected projects to allow for the maximum benefit, while avoiding being pulled in multiple different directions. Effective leaders are able to clearly articulate their guiding principles and focus that allows them to say "yes" to projects that align with their goals and mission, while saying "no" and avoiding projects that do not align. This session builds on the Time Management session during the LC-FMK course. Students will explore the impact of clearly set priorities and develop their own professional vision statements.

IDIS 5656. Learning Communities IMM Unit 6: Change Management. Most people hate change. People will often work very hard to maintain the status quo even in the face of mounting evidence that change is necessary. The most successful leaders are able to effectively guide their followers through periods of change, both large and small. Too often change efforts fail because all of the focus is on what to change without any explicit consideration and planning regarding how to manage the change. In this session, students will explore change management models from the business literature and consider applications to the medical arena.

IDIS 5657. Learning Communities IMM Unit 7: Dealing with Ambiguity. No one likes uncertainty, especially not physicians who often feel like they must have "all of the answers". Ambiguity and uncertainty often lead to stress and decreased satisfaction among practicing physicians. Developing strategies to manage uncertainty are essential for physicians in their leadership as well as in their practice of medicine.

IDIS 5658. Learning Communities IMM Unit 8: Leading and Managing Up. Many individuals early in their journey to becoming leaders are confronted with the question "Is it possible to lead well when I am not the one in charge?" "Ninety-nine percent of all leadership occurs not from the top but from the middle of an organization." There are well described characteristics and actions involved with being a good follower, as well as for "leading up" from a position lower in a leadership hierarchy. Becoming a good follower and developing the skills to lead from the middle can greatly impact an individual's leadership success.

IDIS 5701. FHD: Advanced Communication 1. Students will build effective communication skills with patients through exploration of topics including health literacy, cross-cultural competence and use of technology in the clinical setting.

IDIS 5702. FHD: Advanced Communication 2. Students will learn effective communication skills for having difficult conversations, spanning the spectrum from professionalism conversations with colleagues to endof-life and goals of care discussions with patients.

IDIS 5711. FHD: Quality Improvement 1. Students will analyze their clinical microsystem using systems-level tools such as fishbone diagramming and flowcharting, and identify an area for improvement.

IDIS 5712. FHD: Quality Improvement 2. Students will propose a change to their clinic microenvironment and enact that change, collect data and reflect on their results.

IDIS 5713. FHD: Quality Improvement 3. Students will understand the basis of sustaining change and will suggest next steps for continued improvement.

IDIS 5714. FHD: Patient Safety. Students will create virtual presentations of their projects to improve quality of care /patient safety from their clinical microenvironment. Students will discuss strategies for sustaining change and will suggest next steps for continued improvement.

IDIS 5715. FHD: Quality Improvement & Patient Safety Advancedtrack. Students will demonstrate knowledge of the ability to analyze their clinical microsystem using systems-level tools, identify an area for improvement, then propose and enact a change, collect data and reflect on results. Students will also understand the basis of sustaining change and will suggest next steps for continued improvement.

IDIS 5716. FHD: Quality Improvement. Students will demonstrate knowledge of the ability to analyze their clinical microsystem using systems-level tools, identify an area for improvement, then propose and enact a change, collect data and reflect on results. Students will also understand the basis of sustaining change and will suggest next steps for continued improvement.

IDIS 5721. FHD: Interprofessional Education 1. Students will learn about other professionals' roles in patient care as well as the unique cultures, values, roles/responsibilities, and expertise of other health professions; will learn their scope of practice; and will learn how an interprofessional team works together to provide patient care. They will observe interprofessional teamwork within the medical center.

IDIS 5722. FHD: Interprofessional Education 2. Students will integrate knowledge of their own role and roles of other team members to appropriately assess and address health care needs of patients. They will work collaboratively with other team members, seeking out other professionals for consultations in order to formulate an interprofessional care plan for mutual patients.

IDIS 5723. FHD: Interprofessional Education 3. Students will recognize components of a functional effective team dynamic, including recognizing how their own uniqueness of experience level, expertise, culture, power, bias and hierarchy within the health care team contributes to effective communication, conflict resolution, and positive interprofessional working relationships.

IDIS 5731. FHD: Health Policy: Institutions, Politics, and Advocacy. Students will be introduced to key features of the U.S. health care system as well as how to assess the performance of this system along multiple dimensions of importance. The course will supplement student knowledge about the social determinants of health and previous patient advocacy experience with insights about the key institutions, processes and stakeholders that shape health policy. Students will be exposed to the legislative and political histories of recent health reforms and use skills gained in the course to collaborate with colleagues in advocating for positive change.

IDIS 5732. FHD: Health Care Economics. Students will learn and apply core principles of health care economics to understand the state of the US health care system and future policy directions related to market forces, medical spending, and population health. The covered material will first unpack what features make health care markets special and in turn more complex relative to other goods and services. These insights will then be used to understand the incentives, challenges and landscape of contemporary health insurance and payment models for medical care. This discussion will span public and private payers as well as patient and provider behavior under different financing models and incentive structures. The course will finish by integrating these lessons with recent policy activity related to the Affordable Care Act.

IDIS 5733. FHD: Public Health & Prevention. Students will learn principles of population health including epidemiology and population-focused chronic disease management. Students will be given an individual or population-level problem and asked to propose an appropriate solution and to disclose evidence (e.g., results from existing randomized clinical trials or community interventions, or data from observational studies or the student's individual patient panels) used to arrive at a given solution. At the end of the course, students will have learned about many sources of data and key metrics (e.g., hazard ratios or odds ratios) used to interpret results from population studies, and should be able to apply public health principles in the prevention and management of disease conditions at the population level.

IDIS 5741. Health Care Delivery Immersion I. Health Care Delivery Immersion I serves as an introduction to the Immersion Phase and teaches students details about population and community health, chronic disease management and prevention in addition to skills for addressing communication barriers in complex patient care interactions.

IDIS 5742. Introduction to Core Entrustable Professional Activities. This intersession is dedicated to providing additional preparation for the advanced patient care responsibilities in which students may engage in the fourth year. The focus is on "Core Entrustable Professional Activities for Entering Residency" as outlined by the Association of American Medical Colleges.

IDIS 5743. Health Care Delivery Immersion II. This intersession builds on student experience in the Immersion Phase by preparing students for working in an interprofessional health care team and practicing advanced communication skills to deal with difficult patient conversations.

IDIS 5744. Health Care Delivery Immersion III. This intersession introduces students to the concepts of health care economics and policy issues pertinent to caring for patients in a large macrosystem, including details about the Affordable Care Act and payers such as Medicare, Medicaid, and private insurance.

IDIS 5755. Clinical Preceptorship Program—Foundations of Healthcare Delivery (CPP-FHD). MSTP students will complete Advanced Communication (AC) 1 & 2, Interprofessional Education (IPE) 1, & Population Health and Prevention (PHP) by completing readings, online didactic modules, clinical assignments within the CPP course, and selected CELA experiences. Topics covered will include health literacy/numeracy, communicating medical errors, facilitating shared decision making, the health care professions, and population health. All requirements must be complete prior to graduation. Completion of the didactic material and project work will total approximately 16-20 curricular hours. Course will be listed on the transcript as part of the CPP and will be graded as pass/fail.

IDIS 5761. Business and Entrepreneurship 1. In this course, students will work closely with other Vanderbilt departments, labs, centers, and groups to connect with the best entrepreneurship programming across the University, and beyond when appropriate. Special attention will be given to industry level innovation activities to encourage a diffusion of the culture of design thinking, integrating the needs of people, the possibilities of technology. This course is a compliment to the MIDP Idea Lab clinical capstone course allowing for the continued stagegating of testing model, communication of design, and business planning. This course is part 1.

IDIS 5762. Business and Entrepreneurship 2. In this course, students will work closely with other Vanderbilt departments, labs, centers, and groups to connect with the best entrepreneurship programming across the University, and beyond when appropriate. Special attention will be given to industry level innovation activities to encourage a diffusion of the culture of design thinking, integrating the needs of people, the possibilities of technology. This course is a compliment to the MIDP Idea Lab clinical capstone course allowing for the continued stagegating of testing model, communication of design, and business planning. This course is part 2.

IDIS 5800. Industry Immersion. Industry immersion experience will offer fourth-year MIDP students the opportunity to be exposed to innovation within the non-academic health care industry. Students will understand the environmental pressures industry faces regarding a more immediate product and process-associated time horizon. MIDP students will experience first-hand knowledge of company cultures and will turn new contacts into mutually beneficial long-term relationships. Problem solving within industry will help develop their mindset for and experience in design thinking.

IDIS 5920. AE: Approaching End of Life. Students will be exposed to the personal, policy, practical and professional dimensions of care for the dying. Through selected readings, discussions and weekly projects, this seminar invites students to see the connections between individual and collective attitudes towards dying and the wide-ranging effects these attitudes have on policy decisions and practices of care.

IDIS 5925. AE: WikiMed. "Imagine a world where all people have access to high quality health information clearly written in their own language"-Wikipedia co-founder Jimmy Wales. Have you used Wikipedia to access health-related information? Chances are that your patients have! What about medical wikis such as Radiopaedia, HemOnc.org, Orthobullets, or Wiki Journal Club? A "wiki" is a website on which users collaboratively contribute and modify content and structure. Students in the WikiMed elective will go on a journey to better understand one of the most widely used platforms for health information in the world. In one month, you will make meaningful and valuable contributions to topics of interest on both Wikipedia and a medical wiki. By the end of the month, you will have the tools to effectively contribute medical content to these collaborative platforms. We'll kick off with a two-day in-person introduction to editing wikis. The remainder of the elective will be independent, with virtual participation through weekly Work-in-Progress sessions, where students will touch base with peer reviewers, course directors, and librarians.

IDIS 5930. AE: Preparation for Internship. This course will provide students with essential knowledge and skills to enter internship (of any discipline) with confidence. Informed by interviews with residents and program directors, the curriculum will cover common clinical problems managed by interns and will review most frequently-used medications. Workplace challenges, advanced communication tasks and teaching skills will also be addressed. The course utilizes a variety of methods, including lecture, small group and panel discussion, as well as skills labs and simulation.

IDIS 5935. AE: Career Exploration. The Career Exploration Advanced Elective is an interdisciplinary 4-week elective offered to 3rd year students and returning MSTP students during their immersion phase. This elective is designed for students who remain undecided about their specialty after completing clerkships, with the goal of offering students additional exposure to various specialties and providing further insight into potential career paths. Students will rotate through 2-4 clinical settings of their preference, with each rotation lasting 1-2 weeks (e.g., four 1-week rotations, two 2-week rotations, or a combination of 1- and 2-week rotations). At the end of the elective, students will meet oneon-one with the Dean of Students to discuss their experiences on the elective, receive career advising, and review their CV and/or personal statement (see additional resources on the CiM website). Students will be asked to keep a log of their rotations (dates and supervising attendings and/or residents), write a reflection on their experiences, and complete brief pre- and post-elective surveys. Please note that this Advanced Elective will not count for clinical credit.

IDIS 5940. AE: Student Hotspotting. On a team of 4-8 interprofessional students, students will work with a panel of patients who have complex

care needs over the course of the year. Together, students will work to provide non-clinical support as a patient advocate in collaboration with providers in the Vanderbilt Complex Care Network. Formal learning is conducted through orientation, monthly journal clubs, and a final capstone presentation. Topics covered include but are not limited to motivational interviewing, trauma-informed care, harm reduction/readiness to change, conducting home visits, social resources in Nashville, and provider resilience. Journal clubs and team check-ins will occur, on average, every other Wednesday evening from 7:00-8:30 pm.

IDIS 5941. AE: Student Director of Hotspotting. On a team of 2-4 interprofessional students and working with faculty directors, student leaders will work to coordinate and facilitate the Student Hotspotting elective. Leadership responsibilities will include but are not limited to scheduling, teaching a foundational content seminar during orientation, facilitating team-facilitator check ins, maintaining a database of useful resources, and tracking student cohort member progress throughout the course (for a full list of responsibilities, see application). This track is designed for students with a strong interest in teaching and leadership, particularly for individuals with a strong interest in health disparities, complex care, and social determinants of health. Journal clubs and team check ins will occur, on average, every other Wednesday evening from 7:00-8:30 pm.

IDIS 5945. AE: Leadership in Medicine: A Developmental Journey.

IDIS 6003. Research Immersion: Community & Global Health. This approach engages communities locally and globally to hasten the adoption, integration, implementation and evaluation of population health policies and practices. Potential research in community and global health includes clinical practice and investigation, public health and biomedical science, health care delivery, basic and implementation science and community-based participatory research. This research addresses community-identified priorities and embraces health issues that disproportionately affect primarily, but not exclusively, underserved populations, including middle and low-income countries and neighborhoods and foreign-born populations (immigrants and refugees). Areas of investigation include health risks or diseases, obstacles to achieving optimal health, socio-cultural, historical and clinical aspects of caring for underserved populations, barriers to diagnosis and treatment, and strategies/interventions that motivate patients to practice positive health behaviors.

IDIS 6004. Research Immersion: Epidemiology & Informatics. Epidemiology is the science of identifying and understanding the patterns and determinants or causes of disease in human populations. Epidemiology informs policy decisions and evidence-based practice by identifying risk factors for disease and targets for preventive healthcare. Epidemiologic methods are used in clinical research and public health studies and assist in study design, collection and statistical analysis of data, and interpretation and dissemination of results. Biomedical Informatios focuses on the storage, retrieval and use of biomedical information for problem solving and decision-making in healthcare settings. Research is applicable in all areas of healthcare ranging from developing, evaluating and refining the computer tools available to clinicians caring for patients, and using computer applications and techniques to assemble evidence about specific topics, to managing biologic or genomic information in ways that supports discovery and guides basic science research.

IDIS 6005. Research Immersion: Ethics, Education, Policy, and Society. Ethics, Education, Policy, and Society (E2PS) studies include the ethical and social dimensions of medicine and provide understanding about how medicine both shapes and is shaped by the larger cultural and policy environments. Encompassing a broad range of disciplines in relation to medicine, including philosophy, economics, religion, anthropology, sociology and law, related studies can help foster professional competence and responsibility, while offering guidance to practitioners and policymakers working to improve the efficiency and quality of the healthcare system. Research projects might include historical inquiry in medicine, patients' or physicians' accounts of illness, along with ethical and legal aspects of health policies, technology, and genomics. Similarly, health policy studies can offer empirical insights regarding the potential impact of decisions by consumers, providers, and society by assessing policy changes or interventions on access, costs, or quality of healthcare. **IDIS 6006. Research Immersion: Bench to Bedside.** This area includes laboratory-based research, addressing the mechanisms of disease and therapeutics, through basic, pre-clinical, clinical and translational research, including research in cell culture, animal models and human subjects and/ or specimens (both identified and de-identified). The questions that are addressed range from the traditional 'wet lab' types of research, involving experimental techniques with cells, tissues, biospecimens, or animal models, as well as devices, instrumentation, drug development, and computational research as well as studies in human subjects including surveys, cross-sectional studies, case series, case-control studies, cohort studies, first-in-human, proof of principle, and all phases of clinical trials. Inquiry in this area often interacts closely and/or overlap with other areas of research as well.

IDIS 6007. Innovation Design Experience and Application Lab. This course is designed for MD students in the MIDP Program who have completed the Innovation Activism course. It takes the place of the Research Immersion for traditional MD students. Students will learn to take clinical challenges identified in the Innovation Activism course through the engineering design process from deployment of prototype to final design and clinical adoption. Students may work in teams comprised of other MIDP students, other engineers or engineering students, and clinicians. Solutions designed in this lab may be further developed from the business and regulatory perspectives in the two MIDP Integrated Science Courses. This lab will begin in September of third year and last at least three months.

IDIS 6010. Research Immersion. TBD

IDIS 6100. Special Clinical Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

IDIS 6150. Special Research Study—VU. Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

IDIS 6200. Special Study Non-Clinical. Each student arranges an independent study with a mentor and completes a period of medically relevant work. Approval required.

IDIS 6300. Full-Year Research. Students enrolled in this full-year research course are participating in various research activities including Vanderbilt Medical Scholars, Howard Hughes Medical Institute Research, Sarnoff Cardiovascular Research Program, or Fogerty International Research Scholars Program. Approval required.

IDIS 6305. Full-Year Service Learning. Students enrolled in this yearlong course are participating in an activity of medical service to the community. Approval required.

IDIS 7001. Research Immersion: AWAY. This course follows the descriptions for IDIS 6001-6005 except that, for specific circumstances, the student has been approved to complete their research project with a mentor at another institution. This is allowed only with approval of all of the following: Associate Dean for Medical Student Affairs, Assistant Dean for Physician-Scientist Training, the student's Research Director, and agreement of non-Vanderbilt mentor.

IDIS 7100. AWAY ACE: Interdisciplinary. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

IDIS 7150. Special Research Study—Non VU. Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

IDIS 7222. AE: Ethics in Health Care: Theological and Philosophical Perspectives. [MEDD cross-listing for DIV 7222] This course examines a broad range of theological and philosophical methods for dealing with ethical questions as they arise in contemporary American healthcare. We will read influential texts from Protestant and Catholic Christianity, Jewish thought, contemporary Anglo-American philosophy, as well as classic texts from the virtue traditions. Our aim is to apply the teachings of these texts to a range of practical issues, including issues at the beginning and end of life, questions that arise in routine patient care, and major policy issues in health and health care. We will probe the dialectic between practice and theory, being attentive to their reciprocal influences. A major aim of the seminar is to gain critical purchase on the tools that various theological and philosophical traditions provide as guides to thinking and action, and to assess their uses and limits. A second major agenda is to become more critically aware of our own moral intuitions and assumptions.

Global Health

IGHM 5240. Foundations of Global Health. This course introduces students to key topics, concepts and methods in global health, examining determinants of complex issues and exploring multi-dimensional approaches and interventions with a particular emphasis on low resource settings. Health and developmental issues across nations and cultures that require collective (partnership-based) action are highlighted by an interdisciplinary faculty using didactic, interactive and practical elements of instruction. At the conclusion of the course, students should be able to discuss research and evaluation methodologies commonly used in the field, identify key global health questions and design suitable projects that address the questions. This course is a requirement for the Global Health Certificate. First and second year. Fall.

IGHM 5241. Essential Skills in Global Health. This course introduces students to core research, field tools, assessment and implementation techniques, and evaluation methodologies used commonly in the field of global health. Various theories and practices that are commonly used to analyze issues and intervene in global health are explored. A key objective of the course is to examine determinants of global health and development from an interdisciplinary vantage point. Health and developmental issues across nations and cultures that require collective (partnershipbased) action are highlighted. The course is taught by an interdisciplinary faculty and external resource persons using didactic, interactive and practical elements of instruction. First and second year. Spring.

IGHM 5242. Informatics for Global Health Professionals. This course serves as an introduction to medical informatics with an emphasis on global health care settings. As global health bridges both patient care and public health, so informatics in this context covers both patient-based information systems and public health information systems. International cooperation on health information system issues has resulted in both extensive knowledge repositories and a powerful set of tools and techniques that can be used by practitioners and researchers. The module consists of lectures with discussion and analysis as well as hands-on instruction with some software applications and electronic resources. This course may be taken as credit toward the Global Health Certificate. First and Second Year. Fall.

IGHM 5244. Ethics in Global Health. This course provides an overview of ethical issues and standards in global health, particularly with respect to ethics in international research. Its aim is to provide students in the health professions and others interested in global health with a framework in which to recognize, examine, resolve, and prevent ethical conflicts in their international work. Through readings, lectures and discussion, students will explore diverse historical and contemporary international perspectives on the concepts of ethics and health as well as formulating recommendations for prevention and resolution of ethical conflicts related to global health. This course may be taken as credit toward the Global Health Certificate. First and Second Year. Spring.

IGHM 5249. Case Studies in Tropical Diseases. This course will introduce tropical diseases and parasitology in a clinical case study format with student group leadership that is facilitated by faculty with substantial front-line tropical medicine training and experience. Written case protocols will be presented by faculty members and Infectious Disease fellows/ Internal Medicine residents who will lead an interactive discussion involving pathophysiology, clinical presentation, differential diagnosis, diagnosis and treatment. This course may be taken as credit toward the Global Health Certificate. First and Second Year. Spring.

IGHM 5250. Global Health Politics and Policy. Global Health Politics and Policy introduces core global health problems facing the world's populations today and examines the efforts taken to improve health at a global level. It focuses on the social and political movements of global health issues and how

these forces created and shaped global health policy both in the U.S. and among the G8 nations from 2000-2011. First and Second Year. Spring.

IGHM 5272. Fundamentals of Global Health: Addressing Global Health Disparities. This elective course is designed for graduate students interested in global health and will consist of seven units: Introduction to Global Health, Health Disparities, Health Care Delivery Systems, Evidence-based Practice, Non-communicable and Communicable illnesses, Trauma and Violence and Effective, Ethical Models for Global Health Engagement. The course will focus on best practices for allocating scarce resources and engaging in interdisciplinary global health work with diverse communities from a cultural, ethical and clinical perspective. Students will engage in learning through readings, synchronous and asynchronous discussions, case studies and written assignments. This course is designed for students interested in caring for and empowering underserved populations locally and abroad.

IGHM 5280. Local Applications of Global Health. This is an elective course designed for graduate students interested in the local context of global health applications. This course will consist of weekly discussions led by interdisciplinary experts in global health, within and outside of VU. Topics will focus on interdisciplinary innovations that alleviate health disparities in diverse settings locally and abroad. Students will engage in learning through readings, attendance and participation in discussion and debates at weekly seminars and assignments. This course is designed for students interested in reciprocity in global health and caring for underserved populations locally and abroad, and builds on a diverse base of prerequisite knowledge in interdisciplinary fields pertaining to health, social justice, sustainable development, and working in interdisciplinary teams.

IGHM 5284. Planetary Health, Policy and Social Justice. This is an elective course designed for students interested in exploring the intersections between primary care, planetary health and climate change (according to WHO, currently the greatest threat to global health), social justice and policy. The causes of climate change and the resulting primary, secondary and tertiary impacts on people and communities will be examined through the lens of global health and policy. Students will work with local agencies to develop evidence-based and targeted adaptation and mitigation strategies as well as policy-based solutions, all incorporating science and engineering, political science and policy, law and economics as well as nursing and medicine to address healthspan disparities related to climate change and social vulnerability.

Medical Education and Administration

MADM 5750. AE: Students as Teachers. The goal of this course is to prepare immersion phase medical students to become effective teachers as residents. The course offers a longitudinal didactic program, bringing the cohort together throughout the year to discuss general teaching strategies, educational theory and to review educational literature (the need for flexibility in scheduling is recognized). This is combined with an opportunity to enhance proficiency in one specific teaching environment by participating in the delivery of a particular course or program in the general curriculum. Students will practice teaching skills, gain an appreciation for evidence-based teaching techniques, and receive mentoring and feedback from established educators.

MADM 5761. AE: Student Director of Students as Teachers. Students in this course serve as year-long student directors of the Students-as-Teachers advanced elective. Under faculty guidance, student directors learn principles of course development and management, to include: establishing learning objectives, determining and scheduling an appropriate mix of learning & assessment activities, posting a syllabus, upkeep of the online learning management system, communicating with students enrolled in the course, updating the faculty course director(s), and tracking student participation. (Student directors will not assign final grades to peers.)

MADM 5771. AE: Student Director of Shade Tree. Students in this course serve as year-long student directors of ACE: Shade Tree Clinical Service Learning. Under faculty guidance, student directors learn principles of course development and management, to include: establishing

learning objectives, determining and scheduling an appropriate mix of learning & assessment activities, posting a syllabus, upkeep of the online learning management system, communicating with students enrolled in the course, updating the faculty course director(s), and tracking student participation. (Student directors will not assign final grades to peers.)

Medicine

MED 5012. Physical Diagnosis. The introduction to clinical medicine course for second year students. Emphasizes interviewing skills, acquiring a medical database, and performing a comprehensive physical examination. Utilizes a mentor system with groups of four students assigned to two faculty tutors who will guide them through history taking, patient examinations, and write-ups. Includes lectures, practical sessions, and patient encounters. Second year.

MED 5016. Diagnostics and Therapeutics. This required course is offered during the clerkship year of the curriculum. The goals of the course are to teach techniques in clinical decision making, with an emphasis on many factors that may impact the clinician's approach to the presenting complaint, e.g., pretest probability, risks, and costs of studies; to give the students an understanding of the laboratory and radiographic tools used to work through a differential and arrive at a diagnosis; and to impart a basic understanding of treatments rendered for common disease processes that they will encounter. The full-time introductory segment at the beginning of the clerkship year will be followed by weekly exposure through the year to online modules and small group activities that delve into specific presenting complaints with explicit discussion of how the clinician works through each of these clinical problems and treats the final diagnosis. Foundations of Clinical Care phase.

MED 5020. Medicine Core Clerkship. Second-year medical students participate in an eight-week, inpatient clinical clerkship under the aegis of the Department of Medicine, utilizing the clinical services of the Vanderbilt and VA hospitals. It is believed that learning is most vivid through direct experience with patients, obtaining histories, and doing physicals and laboratory studies, and that it is amplified by reading and intensive contact with members of the teaching staff and house staff. Students are given considerable responsibility under close supervision of the teaching staff. Six weeks of the clerkship is devoted to inpatient experience. This is further divided into three rotations; one general medicine, one subspecialty medicine, and a final that may be either general or subspecialty. Each student is assigned to a faculty/resident team and functions as an apprentice physician with graded responsibility for the evaluation and management of patients admitted to the medicine service. Students participate in clinical and teaching activities of the service, including daily attending rounds, morning report, noon conferences, Grand Rounds. Students receive student directed curricular content in the form of weekly core lectures, weekly "chalk talks" and clinical case conferences. In addition, students meet on a regular basis with an assigned Master Clinical Teacher to undergo supervised histories, physicals, and presentation with directed feedback and coaching.

MED 5302. Cardiovascular Physiology. Students will review cardiovascular physiologic principles in the setting of a high volume clinical cardiac MRI lab. Students will have the opportunity to interview patients, auscultate cardiac murmurs, review relevant records such as ECG/blood pressure measurements/heart rhythm strips; and then correlate physical exam findings and patient history with high resolution MRI imaging in a wide variety of cardiovascular pathologies. The cardiac MRI lab reviews an average of 6-8 cases a day, with cardiac conditions ranging from normal findings; atrial fibrillation; ischemic, nonischemic, and hypertrophic cardiomyopathies; congenital cases (both pre and postsurgical); pulmonary hypertension; cardiac transplant; stress testing; and cardiac valvular diseases. A relevant cardiovascular physiologic principle will be reviewed at the beginning of each day. The physiology concepts to be reviewed will be selected depending on significance to the cases on the MRI schedule. At the conclusion of this fun and engaging two-week elective rotation, students will have reinforced their knowledge of cardiovascular physiology by combining a review of the pertinent concepts with clinically relevant and patient-oriented cardiovascular imaging cases. The combination of concept review applied to real time clinical cardiovascular imaging will

strengthen the knowledge of cardiovascular physiology in a unique and unforgettable way. This elective course will provide a unique and compelling preparation for the cardiology intern year.

MED 5304. Integrative Medicine. Students in this two-week elective will participate in helping patients develop and implement treatment plans for lifestyle and behavior change through the Vanderbilt Center for Integrative Health (VCIH). The VCIH cares for the whole person-mind, body, and spirit. Using the resources of the clinic, including health coaching, the students will develop their own personal plan for wellness. They will also learn the management of chronic pain and complex chronic disease working with a multi-disciplinary team. This will include exposure to clinical consults (medical and acupuncture), therapeutic movement classes, chronic pain skills groups, and group nutrition coaching. Students will also participate in a weekly multi-disciplinary case conference. At the conclusion of the elective, students will be able to take an integrative medicine patient history with emphasis on the patient's perspective and experience of disease/illness and relevant psychosocial history; identify and describe the patient's capacity for behavioral change including barriers and readiness to change; assist patients in developing a personalized plan of care; explain integrative medicine treatment plans by citing appropriate medical literature; participate in inter-professional care to develop skills in interacting with other health professionals to develop integrative health plans for patients; demonstrate understanding of relevant neuroscience research including neuroplasticity, biomechanics, adaptive behavior patterning, biopsychosocial model, and treatment plans for patients with chronic pain (e.g., rheumatologic conditions, cancer, physical trauma, neurological disease) and frequent co-morbid psychological conditions (e.g., depression, anxiety, post-traumatic stress disorder); and explain the role of central sensitization in chronic pain.

MED 5306. Prevention of Ischemic Events. This two-week elective will cover the outpatient management of cardiovascular risk, ranging from diagnosis and appropriate control of co-morbidities such as dyslipidemia, hypertension, and diabetes, to the appropriate risk assessment strategy including non-invasive vascular evaluations, to tailored interventions addressing lifestyle and medications. At the conclusion of the two weeks, students will be able to appropriately identify and diagnose cardiovascular risk factors and co-morbidities and determine the strategy for full cardiovascular risk assessment, including performing non-invasive imaging tests, positioning the patient in a definite ten-year and lifetime cardiovascular risk category, and developing a management plan including proper lifestyle and pharmacologic interventions based on guidelines, evidence, and standard of care approaches.

MED 5308. Critical Care Medicine. This course is an introduction to the field of critical care medicine. Students in this rotation are expected to become familiar with the physiology and pathophysiology of critical illness and the care of the critically ill patient. Additionally, they will be expected to integrate basic knowledge of pharmacology and physiology with clinical care and decision-making across two or more ICUs. An early exposure to the breadth of critical care is imperative for every physician in training, as throughout their career they will be expected to recognize life threatening illness and injury and know the indications for providing care. Additionally, it is important to know the long term sequelae associated with critical illness and the socioeconomics of critical care. The students will be expected to attend ICU rounds and to follow the care of 1-2 patients assigned to them who are admitted to the ICU. In addition, they will be assigned to select faculty daily to present their patient. This will require them to understand the physiology and pathophysiology of the disease process to present a working differential diagnosis. They will also be expected to attend daily teaching sessions with the select faculty based on a pre-determined schedule. This includes synthesizing information from the electronic medical record, the bedside nurses, the consulting physicians, and the primary team.

MED 5312. Clinical Rheumatology. This is an outpatient service rotation designed to immerse the student extern in the evaluation and care of patients with a wide variety of rheumatic diseases. Special emphasis is placed on the patients with rheumatoid arthritis and lupus; however, all of the inflammatory and degenerative connective tissue disorders will be seen and reviewed. There is daily contact with several rheumatologists as well as the entire staff of the Arthritis Center at Vanderbilt Hospital (physical therapy, occupational therapy, patient educator, etc.) The student will observe patient evaluations and treatment methods and will be expected to perform some new patient assessments. At the conclusion of the elective, students will know the most practical and cost effective means of efficiently planning evaluations and treatments. This rotation is especially valuable to students considering primary care and orthopaedics.

MED 5314. Introduction to Palliative Care. Students will rotate through Vanderbilt Medical Center under the supervision of palliative care specialists. Students will work with the entire multidisciplinary team during this rotation with the goals of learning to apply the fundamentals in pain and symptom management, communication at the end of life, care of the dying patient, and basics of hospice care. Students will rotate on the consultative services and the palliative care unit during the two-week block. Students will gain exposure to patients throughout the hospital from all disciplines of medicine assisting in symptom management, advanced care planning, and hospice. The medical director for palliative care at Vanderbilt University will supervise and evaluate the students on the basis of the six clinical core competencies as delineated by the ACGME. Creative structuring will allow students to make modifications to the rotation to meet individual needs. At the conclusion of the elective, students will be able to gather data as it relates to palliative care; demonstrate use of an interdisciplinary team to optimize patient care; evaluate and manage common symptoms in palliative care; identify goals of care through communication with families and patients in order to develop a plan of care that includes the patient's wishes, medical situation, and code status; recognize signs and symptoms of impending death; and identify different aspects of suffering in palliative care patients.

MED 5322. HIV Medicine. Students will get a comprehensive look at the care of HIV patients by experiencing in-depth the complexities of HIV in both the inpatient and outpatient world. The elective involves spending one week at the Vanderbilt Comprehensive Care Clinic (VCCC- Vanderbilt's outpatient HIV clinic), followed by one week on the inpatient Rogers Infectious Diseases service (the inpatient service which serves the majority of HIV-infected individuals). Students will have the opportunity to take histories and perform physical exams, presenting their findings to the attending provider or nurse practitioner. Content will include lectures, readings, and small group discussions on 'hot topics' in HIV. Concepts such as AIDS in the global context, treatment-as-prevention, and pre-exposure prophylaxis will be addressed in these formats, with a focus on epidemiology, pharmacology, study design, ethical issues, etc. In addition, students will spend time with various members of the HIV care team, including an HIV pharmacist, dietician, clinical pharmacy RNs, case managers, and the clinical trials team highlighting the multidisciplinary nature of HIV care with a focus on pharmacology, nutrition, adherence, psychosocial issues, and clinical trials implementation. Students will attend case conferences and will round with the inpatient Infectious Diseases nurse liaison and case manager. At the conclusion of the two-week elective, students will be able to construct or formulate a history from someone living with HIV infection, with a focus on the important physical exam findings, social information, and laboratory values from each patient; describe basic pathogenesis and basic virology of HIV infection; discuss fundamentals about HIV treatment; demonstrate a familiarity with the evidence-based, multidisciplinary approach to HIV care; and explain some of the recent breakthroughs in HIV care and some of the challenges facing the epidemic from a global perspective.

MED 5324. Team-Based Geriatric Care. In this two-week elective, students will join a team of attending, resident, and interdisciplinary team members on the Vanderbilt Acute Care for Elderly (ACE) Unit in the mornings. Experiences will include diagnosis and management of geriatric syndromes including falls, delirium, dementia, and transitions of care. Students will become acquainted with several patients and present them on rounds. Afternoons will consist of geriatric primary care and consult clinics with exposure to geriatric medication management, chronic illness, and home and community-based services. In the second week students will round mornings with the VA Geriatric Evaluation and Management Unit Team, following and presenting selected patients and contrasting VA with Medicare resources. Afternoons will consist of VA Geriatric Consult and Primary Care Clinics, including a new Patient-Centered Aligned Care Team with a patient-centered medical home model. Relevant handouts and orientation materials

will be provided, and students will participate in the ongoing Geriatrics and Palliative Care didactic series with rotating residents. At the conclusion of the course, students will be able to perform a functional assessment, contribute to an interdisciplinary team meeting, appreciate the clinical decision tree concept while managing patients with multi-morbidity states, and have an awareness of the array of community and institutional resources required to successfully manage transitions of care for frail elderly.

MED 5326. Health Promotion—Dayani Center. This two-week elective is for students interested in health education and health promotion in primarily outpatient rehabilitation programs. Students will observe and participate in the Cardiac and Pulmonary Rehabilitation Programs at the Dayani Center. Additionally, they may elect to spend a portion of this elective in the areas of Physical Therapy, Lymphedema, Nutrition, and Medical Fitness. The format of the elective is direct patient observation. Students may observe graded exercise testing and discuss with staff. At the conclusion of the elective, students will know the fundamental principles of health promotion and understand lifestyle management of common cardiovascular diseases.

MED 5328. Clinical Medicine Sub-Specialties. In this two-week elective, students will work with sub-specialists in clinics of their choosing in the Department of Medicine. Students will have the responsibility of evaluating patients, presenting patients to the attending, and then devising a management plan with the attending. Students are responsible for arranging the clinic half days (minimum 10 half days per 2 week period) with attendings to be approved by the Course Director. At the conclusion of the elective, students have an understanding of the outpatient presentation and management of sub-specialty patient problems, will provide an efficient patient work-up, and will have familiarity with the care provided to patients in the outpatient clinical setting.

MED 5332. Problems in Hematology. This 2 week elective will offer students an introduction to some unique problems that are often encountered in hematology and the principles of how they are managed. The list includes bone marrow failure states, thrombotic and hemorrhagic conditions, transfusion medicine, and hematologic neoplasms including lymphoma, leukemia, and myeloma. Students will spend one week on the malignant hematology inpatient service during which they will be given patients to follow and present during rounds. They will participate in formulating a plan of care emphasizing hematologic issues including transfusion needs, antibiotics, therapeutic options, prognosis survivorship, end of life care and the role of palliation and hospice. Didactics will focus on the diagnosis and management of patients with hematologic cancers. Students will also have the opportunity to spend time in Hematopathology. blood bank, and hematology subspecialty clinics of their choice ranging from benign to malignant hematology and stem cell transplant. At the conclusion of the two-week elective, students will have a basic understanding of some of the unique questions often asked in hematology. They will also have a better understanding of what is involved in devising and recommending a therapeutic plan from the hematology perspective.

MED 5336. Young Women's Health. This elective will offer students a two-week rotation in the Adolescent and Young Adult Health Outpatient Clinic at 100 Oaks with an Adolescent Medicine attending and residents. This clinic has a patient population that is about 70% female and sees a large number of visits for menstrual and gynecologic issues. Patients are evaluated for primary and secondary amenorrhea, menorraghia, dysfunctional uterine bleeding, and dysmenorrhea. Patients are routinely counselled on initiation of contraception and are screened for sexually transmitted infections. Students will have the opportunity to observe patient encounters with the resident and/or attending and then as they feel more comfortable see the patient first and present them to the attending in order to jointly form a plan of care for that patient. At the conclusion of the two-week elective rotation, the student will be able to take a thorough menstrual history and formulate a brief assessment and plan based on presenting complaints/concerns. The student will also feel comfortable taking a sexual history and become more comfortable with various contraceptive options. In addition, the student will review the adolescent specific laws on confidentiality as they pertain to young women's health issues.

MED 5610. ACE: Clinical Nephrology. This experience is designed to give the immersion phase student significant experience in practical clinical nephrology and prepare him or her for future house staff training. Students will participate in daily rounds with the nephrology attending, the nephrology fellow, and the medical resident assigned to the Vanderbilt Hospital nephrology service or the VA nephrology service. Patients with various clinical disorders including fluid and electrolyte abnormalities, acidbase disturbances, glomerular diseases, and disturbances of renal function, including acute and chronic renal failure, will be seen and discussed. Students will have the opportunity to perform renal consults and present patients to the rest of the rounding team. Frequently, the nephrology service is requested to perform emergency consultation which requires acute hemodialysis or acute plasmapheresis. Students may participate in these acute consultations, assist with acute dialysis catheter placement, and develop an understanding of renal emergencies and their treatment.

MED 5611. Al: Medicine, VU. A student may serve as an acting intern on the Vanderbilt general medicine service, with direct supervision by an attending and upper level resident. Acting interns may carry up to 6 patients and may perform up to 3 admissions and 2 ICU transfers daily. Patients assigned will be selected for their teaching value, and the student will be expected to function as a member of the team at a supervised intern level for patient management and communication with other healthcare providers. This will include preparing the admission history and physical examination, entering orders, writing daily progress notes, presenting patients on daily work rounds, caring for a near intern-level patient census and coordinating discharge planning. This format provides an excellent opportunity to evaluate and manage patients with a wide variety of interesting disease processes and allows the acting intern to take more responsibility in the care of his/her patients in preparation for intern year.

MED 5613. ACE: Critical Care, VU. This course is a four-week experience in multidisciplinary critical care medicine from the perspective of internal medicine. The student will be expected to fulfill much of the role of a junior level house officer, but will be closely supervised by interns, residents, and a senior critical care fellow, as well as a critical care attending. The unit is a very active critical care facility which manages a wide variety of medical emergencies using extensive monitoring and support equipment. The emphasis is on pulmonary disease, infection, and renal dysfunction, but covers all aspects of critical illness, including endocrinology, nutritional support, cost containment, and ethical issues. Teaching rounds are given daily, and these are supplemented with didactic lecture-discussions several days each week. Fulfills the acute care course requirement.

MED 5616. Al: Medicine, VAH. This Acting Internship on the Veterans Administration Hospital medical wards allows students to work in concert with the house staff team (assistant resident, intern, and one or two third-year medical students). The acting intern will be assigned new patients each admitting day and will be responsible for their care under the direction of the assistant resident. The acting intern's patients will not be worked up by the regular intern. The student will be expected to attend all of the functions and keep the same hours as the house staff. This should provide an intensive experience in ward medicine.

MED 5619. Al: Critical Care, VAH. This acting internship in the MICU/CCU at the Department of Veterans Affairs Hospital is intended to expose medical students to a variety of important diagnostic and management issues in critical care medicine. The student should have prior general ward experience in medicine and surgery. The student will function in the combined MICU/ CCU as an acting intern under the supervision of a medical resident, a pulmonary/cardiology fellow, and both a pulmonary/critical care and a cardiology attending. The student will actively participate in both general medical intensive care and cardiac intensive care rounds. The student will have an every-third-night in-house call schedule and will work directly with residents and interns. Students will take primary responsibility for patient assessment, documentation and order entry. Students may have a higher patient census than in prior ICU rotations and will assume increasing responsibility for patient care as the month progresses. During the rotation, the student will learn how to evaluate complex critically ill patients and formulate diagnostic and therapeutic plans. The student will become familiar with the principles and techniques of invasive and non-invasive monitoring. Major areas which are stressed include cardiopulmonary pathophysiology, crisis management, ICU and CCU pharmacology, airway management and mechanical ventilation, fluid/electrolytes management, nutritional intervention, and ICU ethics.

By the end of the rotation, the student should be comfortable in the initial assessment and treatment and ongoing care of the most common ICU/ CCU admitting problems and will be prepared for residency ICU rotations. Fulfills the acute care course requirement. VA system access is required. Students cannot take this course if they have not received VA access at least 2 weeks before the course starts.

MED 5620. ACE: Gastroenterology, VU. The adult gastroenterology rotation offers a broad experience in the evaluation and management of adult patients with gastrointestinal disorders such as inflammatory bowel disease, gastrointestinal bleeding, pancreatitis, jaundice, abdominal pain, the use of enteral feeding, and swallowing abnormalities. The rotation would include evaluation of hospitalized adult patients and rounds with the inpatient gastroenterology consultation service at Vanderbilt Medical Center. Students would function as a gastrointestinal consultant, participate actively in inpatient rounds, and participate in teaching conferences sponsored by the division. There would also be exposure to gastrointestinal endoscopic techniques throughout this rotation.

MED 5623. AI: Cardiology. A student may serve as an acting intern on the Vanderbilt inpatient cardiology services, with direct supervision by an attending and upper level resident. Acting interns may carry up to 6 patients and may perform up to 3 admissions and 2 ICU transfers daily. Patients assigned will be selected for their teaching value, and the student will be expected to function as a member of the team at a supervised intern level for patient management and communication with other healthcare providers. This will include preparing the admission history and physical examination, entering orders, writing daily progress notes, presenting patients on daily work rounds, caring for a near intern-level patient census and coordinating discharge planning. This format provides an excellent opportunity to evaluate and manage patients with a wide variety of interesting disease processes and allows the acting intern to take more responsibility in the care of his/her patients in preparation for intern year.

MED 5624. Al: Medicine, Hospitalist. A student on this rotation is expected to serve as an acting intern with direct supervision from a hospitalist. The acting intern is expected to carry up to 6-8 patients at a time by the end of the rotation (they should start the rotation with a lower census). They may admit up to 3 patients per day and accept up to 2 ICU transfers per day. Students are expected to have the experience of caring for hospitalized internal medicine patients with high quality, efficient care. Student will practice taking a history, presenting patients to their attending, responding to urgent issues, entering orders, communicating with patients and consultants, and planning for discharge. This experience will allow students to have more autonomy, take more responsibility for their patients and prepare for intern year.

MED 5625. ACE: Endocrinology. This course is designed to give our medical students exposure to the myriad of endocrine disorders seen by the faculty in the Vanderbilt Division of Endocrinology, Diabetes and Metabolism. It is intended to give medical students the opportunity to evaluate patients with different endocrine disorders, with a focus on physical exam findings, laboratory data, and radiological data. In addition, medical and surgical management of these disorders will be taught. Didactics will supplement the clinical experience and include pathophysiology of these disorders. Both diabetes mellitus and non-diabetes endocrinopathies, including thyroid, pituitary, bone, calcium metabolism and adrenal disorders, will be incorporated into this course.

MED 5655. ACE: Geriatric Medicine. The intent of this course is to provide students with an advanced educational experience in geriatric medicine. Students will gain familiarity with multiple geriatric syndromes: polypharmacy, gait instability, dementia, fragility, pain management, pressure sores, incontinence, osteoporosis; appreciation for continuity of care across different levels of care; and the ability to differentiate between normal aging and disease processes. Students' knowledge of ethical issues will also be enhanced including patient autonomy, driving, and elder abuse. Students will also be able to identify and use community resources effectively, assess and treat multiple geriatric syndromes, organize management of multiple acute and chronic diseases simultaneously, and communicate sensitively and effectively with older persons and caregivers.

MED 5680. ACE: Infectious Diseases. Students will participate as part of the inpatient infectious diseases consultation service for at least two weeks of their rotation. They will be active participants in the initial evaluation, management, and follow-up of patients on the consult service. They should gain competence in diagnostic skills and in the management of infected patients, including the choice and use of antibiotic therapy. Special emphasis will be placed on understanding the epidemiology, pathophysiology, and natural history of infectious diseases. Students will also have a comprehensive experience in the care of HIV patients by participating in both the inpatient and outpatient settings. This portion of the experience will involve spending time at the Vanderbilt Comprehensive Care Clinic (Vanderbilt's outpatient HIV clinic) and/or the inpatient Rogers Infectious Diseases service (the inpatient service that serves the majority of HIV-infected individuals). While in these settings, students will spend time with many members of the HIV care team, including pharmacists, dieticians, clinical pharmacy nurses, case managers, and others to better appreciate the multidisciplinary care needed to address medical comorbidities, medication adherence, psychosocial issues, and other issues pertinent to HIV-infected individuals. Learning opportunities in the course will include live sessions in the form of core content lectures, grand rounds, and/or small groups; online lectures; and recommended readings. Core infectious diseases and HIV/AIDS topics will include antibiotic selection and pharmacology; skin and soft tissue infections; endocarditis; opportunistic infections; HIV antiretroviral therapy; and others.

MED 5691. Al: Cardiac Critical Care. During the acting internship in Critical Care Cardiology, students will actively participate in the management of patients hospitalized in the Cardiovascular Intensive Care Unit. Duties will include the management of patients with (1) cardiogenic shock and acute heart failure, (2) complicated myocardial infarction, (3) complex percutaneous coronary and valvular intervention, (4) pulmonary arterial catheters and continuous hemodynamic monitoring, (5) ventricular support devices, (6) mechanical ventilation, and (7) cardiac arrhythmias. The student will work closely with the on-call medical resident and CVICU fellow and be expected. to write admission and daily progress notes and present patients followed on daily work rounds to the entire team. The rotation will provide a significant "hands-on opportunity" for medical students to participate in the management of critically ill patients. Students will be expected to assume the role of the intern, carrying multiple patients and accepting increased responsibility for their care in order to prepare them for residency. This will be a more robust experience than prior critical care rotations.

MED 5700. ACE: Shade Tree Clinical Service Learning. The Shade Tree Clinic Community Health Experience offers a profound and rich exposure to primary and specialty care medicine in a resource-limited setting at a sub-internship level of responsibility. This course is a longitudinal ACE during the Immersion Phase for senior medical students. The Shade Tree Clinic Community Health Experience is an opportunity to develop clinical case management skills in the context of complex social determinants of health. Students are exposed to community resources needed to provide holistic care to vulnerable patients. They also gain creative, critical thinking skills necessary to confront challenges faced in a resource-limited context. Participating students have the opportunity to (1) enhance clinical patient care skills, (2) mentor and teach junior students, and (3) participate in didactic/skill sessions for advancement of clinical, advocacy, and leadership skills. Students will be expected to schedule 20 clinic shifts throughout the course and complete a final project (or equivalent), which may include leadership and/or staff roles. Clinical skills and knowledge will be assessed incrementally throughout the course.

MED 5730. ACE: Cardiovascular Diagnostics. This course will emphasize the development of skills in EKG interpretation and cardiovascular physical diagnosis. In addition, students will become familiar with the full spectrum of cardiovascular imaging modalities. The aim will be to appreciate their relative strengths and weaknesses as well as indications, techniques, and interpretation. The student will see patients in consultation with cardiology faculty at Vanderbilt and the Nashville VA Medical Center. Regular bedside physical diagnosis rounds will be held with senior Vanderbilt faculty. The student will also be instructed in the use of a heart sound simulator which has been demonstrated to improve diagnostic skills. There will be didactic sessions on EKG interpretation and cardiovascular imaging (including stress testing, nuclear cardiology, echocardiography, coronary angiography, and cardiovascular MR). Finally, weekly conferences to attend include: Clinical Cardiology (2), Echocardiography, Nuclear Medicine, and Cardiology Grand Rounds.

MED 5735. ACE: Palliative Care. Students will rotate through VUMC, the VA Hospital, and community hospice agencies under the supervision of palliative care specialists. Students will follow their own patients and work with an interdisciplinary team (IDT). This opportunity will allow students to learn and apply the fundamentals in pain and symptom management, how to communicate at the end of life, care of the dying patient, and hospice criteria. Students will spend roughly two weeks with the VUMC consult service, one week at the VUMC Palliative Care Unit, and one week at the VA. They will also work several days with community hospice members, child life specialists, chaplains, case managers, social workers, and nurses. At VUMC and the VA Hospital, students will work with the inpatient consultative team and see patients throughout the hospital from all disciplines of medicine assisting in symptom management, advanced care planning, and hospice information. During their time with hospice, they will accompany members of the IDT on home visits and learn more about their various roles in end of life care. The palliative care physicians and nurse practitioners will supervise and evaluate the students on the basis of the six clinical core competencies as delineated by the ACGME. Creative structuring will allow students to make modifications to the rotation to meet individual needs.

MED 5740. ACE: Pulmonary Consult. This course consists of seeing all pulmonary consultations at VU Hospital, presenting the cases to conferences and rounds, participating in pulmonary laboratory testing, fiberoptic bronchoscopy, and cardiopulmonary exercise testing, and attending joint pulmonary conferences. Case mix includes chronic obstructive pulmonary disease, pulmonary renal syndromes, vasculitis, sleep apnea, pulmonary nodules, infectious and non-infectious pulmonary infiltrates.

MED 5760. ACE: Rheumatology. Time will be spent primarily in the rheumatology clinic at the Vanderbilt clinic and the VA Hospital (VAH). Students will have an opportunity to be involved in the consultation from the hospital with the rheumatology team at VUMC and VAH. Students will have an exposure to several clinics with different rheumatologists each day, and they will observe patient evaluations and treatments. Materials for study will be given. There will be an expectation from a student to perform patient assessment especially in terms of history taking and physical examination focusing on rheumatology. Students will have an opportunity to attend all rheumatology conferences, in both clinical and research meetings.

MED 5780. ACE: Medical Oncology. This advanced clinical experience will provide the student with a broad overview of clinical oncology. Inpatient exposure will be centered at Vanderbilt Hospital, where the student will assist in the evaluation of new oncology service admissions and new consultations. The student will make morning rounds and present new cases to the oncology attending. In addition to inpatient exposure, the student can attend two to three outpatient clinics per week. During the rotation, the student will also attend the Division of Oncology conferences at Vanderbilt.

MED 5785. ACE: Hematology-Oncology. The goal of this course is to introduce students to the core concepts of hematology, how they are applied to patient care in the inpatient and outpatient care setting, and how various components including clinical hematology, hematopathology, blood banking, and coagulation medicine interplay to provide comprehensive hematologic care. Students will have 2 weeks of hands on experience in the management of hematologic disorders in the inpatient setting. The remaining 2 weeks will be spent in the ambulatory clinic setting, inpatient consults and laboratory exposure.

MED 5825. ACE: Medical Ethics. This course is designed as a capstone experience in ethics, building upon the ethics components in FMK and FCC. The core activity will be participation in the activities of the clinical ethics consultation service provided to Vanderbilt Medical Center by the faculty of the Center for Biomedical Ethics and Society. Activities during this 4-week ACE will include directed readings in areas related to the consult work, attendance at conferences, lectures, case reviews and additional work in ethics of special interest to the student's future residency training. The course will fulfill the immersion course requirement for the Certificate in Bioethics, although being a candidate in the Certificate Program is not a requirement for taking this course. Discussion with Dr. Joe Fanning, the Director of the Clinical Ethics Consult Service is strongly recommended prior to enrollment.

MED 6100. Special Clinical Study: Medicine, VU. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

MED 7100. AWAY ACE: Medicine. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

MED 7150. Special Research Study: Medicine, VU. Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

MED 7200. AE: Global Health. This four-week AE is an extension of the Global Health ISC and aims to provide clinical experience in the care of patients in low- and middle-income countries (LMICs), most often in resource-constrained environments. Students assess the most common health problems encountered at the site, the usual treatment protocols, and how management differs from that in the U.S. or other developed countries. Students learn how treatment and treatment decisions are influenced by local contexts, policies, and cultural components. In this AE, students mindfully and ethically draw on their 'resourcefulness' to navigate the various constraints of working in resource-constrained settings. The hospital or clinic site is arranged by the student and approved by course director. Approval can be facilitated by Vanderbilt faculty involvement at the site. Students may elect to combine clinical work with language immersion studies (such as Spanish). If the intended location is on the State Department Travel Alert List, additional approval is required. Students are responsible for covering all of their personal expenses associated with the course and travel, but small amounts of funding may be available.

Neurology

NEUR 5020. Neurology Core Clerkship. The rotating students of the second-year class are alternately assigned to two 2-week (total=4 weeks) rotating blocks of clinical neurology inpatient and outpatient experience. Students are given direct responsibility for the evaluation and care of patients under the supervision of house staff and faculty. This exposure is intended to provide the students with an approach to patients with diseases of the central, peripheral, and autonomic nervous systems and skeletal muscles. At the end of the rotation, students will take the NBME exam. Departmental recognition is given to the highest NBME score. Exposures to other areas of neurology can be arranged, talk to the clerkship director. Second year.

NEUR 5315. Movement Disorders/Deep Brain. Students must complete the Neurology clerkship prior to this elective. The overall goal of this elective is to immerse students in the evaluation and treatment of patients with movement disorders with a focus on those treated with deep brain stimulation. Students will spend time with these unique patients from diagnosis to advanced stages. The elective will include brief didactics on the most commonly followed disorders including Parkinson's disease and Essential Tremor. Clinical time will be spent in the Neurology clinic diagnosing and medically treating patients. Students will be involved in the selection of patients for surgical intervention and observe key components of pre-surgical evaluation. In the operating room, student will participate in all stages of deep brain stimulation (DBS) surgery from the Neurology, Neurosurgery, and Neurophysiology perspectives. Students will assist with post-operative DBS programming. Students may also attend the multi-disciplinary DBS conference, which occurs once a month, if the course overlaps with the timing. At the end of the two-week rotation, the student will feel confident in the presentation, examination, diagnosis, and treatment options for patients with movement disorders. Students will be expected to demonstrate a focused history and neurologically focused physical exam and will be able to articulate the indication for DBS, expected benefit, and potential risks.

NEUR 5612. ACE: General Neurology. Students will participate in a fourweek general neurology advanced clinical experience that will have a flexible schedule to allow students to pursue specific interests. The schedule will be individually tailored through discussion/planning with the ACE director and involve participation in the following venues: outpatient clinic, general inpatient neurology service and adult neurology consult service. Students may choose to spend all four weeks in one venue or put together a combination of two or three venues.

NEUR 5620. ACE: Stroke. Students will participate in a four-week stroke advanced clinical experience that will involve inpatient, outpatient and procedural activities. The main venue of participation will be the inpatient stroke service where students will be responsible for carrying a census of patients (presenting on rounds), going to and assisting with stroke alerts, and participating in the education of clerkship students on the service. Students will also have the opportunity to go to stroke clinic and the angiogram suite to learn about and observe diagnostic angiograms and intraarterial procedures. Students will also attend the weekly multidisciplinary cerebrovascular conference, and spend time with the Neuro ICU team. Students will be expected to stay for overnight call at least two times during the four-week rotation.

NEUR 6100. Special Clinical Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

NEUR 7100. AWAY ACE: Neurology. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

NEUR 7150. Special Research Study—Non-VU. Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

Obstetrics and Gynecology

OBGN 5020. OB/GYN Core Clerkship. Each member of the secondyear class is assigned to the obstetrics and gynecology service for fiveand-one-half weeks. Vanderbilt University Hospital. Each student will spend two-and-one-half weeks on the obstetrical rotation. While on the maternal-fetal service this will include daily attending rounds and involvement with the maternal-transport service. Students will also be assigned to the perinatal group practice service. In addition to being involved on labor and delivery, students will help manage obstetric patients who are followed in the Vanderbilt Clinic. Each student will spend two-and-one-half weeks on gynecology. Each student will spend one-half day per week in continuity clinic, one-half day in colposcopy clinic, and one-half day in clinical transaction project. Daily teaching rounds are conducted by the GYN oncologists. The general gynecology service provides exposure to the medical and surgical management of patients seen at the Gynecology Clinic. The two-week rotation at Baptist Hospital provides excellent exposure to operative gynecology and to gynecology in the private practice setting. In addition, students are encouraged to observe surgical cases performed by the reproductive endocrinology service. The five-and-onehalf-weeks rotation provides a broad based introduction to the discipline of obstetrics and gynecology. Included in the rotation is a lecture series given by the faculty covering general obstetrics, high-risk obstetrics, gynecologic oncology, reproductive endocrinology, and general gynecology.

OBGN 5610. ACE: Community Practice in Women's Health (at Northcrest). The student will be exposed to the unique and wide array of care provided in the outpatient clinical setting in a rural and community obstetrics and gynecology practice. Students will actively participate in the assessment and management of patients with the ability to tailor their experience to cases of interest. Students will be expected to develop a plan of care and implement this plan. Students will also be exposed to common outpatient procedures like colposcopy, IUD management, vulvar biopsies. By the end of the rotation, students should be familiar with annual and preventive medicine, contraception management, management and treatment of abnormal uterine bleeding, routine obstetric care, common endocrinopathies, surgical management of common gynecological problems, and others.

OBGN 5615. ACE: Family Planning. The Family Planning Advanced Clinical Experience aims to expose, educate, and empower students on the practical and philosophical intersections between medicine and reproductive justice. At the conclusion of this rotation, students will be well educated and experienced in contraceptive methods, early pregnancy management, and evidence-based abortion care. Students will also learn about the impact that social and societal limitations can have on the provision of evidence-based care.

OBGN 5620. Al: Maternal Fetal Medicine. During this rotation, the student receives advanced experience in high-risk obstetrics designed to gradually provide the student with a sense of responsibility and ownership for the patients under his/her care similar to that of our first year residents. Students help to direct both the antepartum and postpartum care of patients with preterm labor, PPROM, and pregnancy-induced hypertension. By the end of the rotation, the student is responsible for daily documentation including admission/discharge/daily progress notes, supervised order entry, and patient cross-cover reporting to the resident team. The student is expected to be familiar with the main complications of pregnancy, be confident in delivering directed and concise patient assessments and treatment plans, and have mastered the mechanisms of normal labor and delivery. Specific learning activities include daily morning obstetrical teaching rounds; attendance at resident didactics; participation in resident OB emergency simulation training when available, and overnight call on labor and delivery suite. Learning resources include one-on-one interactions with the obstetrical house staff and attendings, access to current obstetrical texts and journals, and teaching conferences.

OBGN 5630. ACE: Maternal Fetal Medicine. During this rotation, the student receives advanced exposure to the practice of outpatient high-risk obstetrics. Students will help to direct the outpatient antepartum care of women with common complications of pregnancy, including preterm labor, pre-gestational diabetes, chronic hypertension, PPROM, and preeclampsia. By the end of the rotation, the student should be familiar with common complications of pregnancy and be confident in delivering directed and concise patient assessments and treatment plans. Outpatient learning activities include attendance in MFM return OB and consult clinics, with additional time spent in diabetes clinic, and obstetrical ultrasound. The student will develop and complete an individualized learning plan during the rotation that may involve some inpatient training opportunities. OB simulation training exercises will be utilized at the beginning and end of the rotation in order to assess student knowledge, communication skills, and procedural competencies. The student will meet with faculty preceptor(s) 1 to 2x/week to review specific cases related to learning plan objectives.

OBGN 5635. ACE: Clinical Obstetrics. This course is designed to be a focused experience on labor and delivery to give students more experience in basic management of obstetric patients. This course will familiarize the student with the physiology of labor and delivery. Students will be expected to work with the team learning cervical exams, basic ultrasound assessment, and delivery skills. They will also work with the team in the operating room learning skills for cesarean delivery. The student will also follow postpartum patients with the residents and attendings. An individualized curriculum will be planned which will include experience on days and nights with the team on labor and delivery and in triage. The student will be expected to assist with teaching the FCC students on the rotation as well. The student should finish this experience with confidence to complete tasks required of an intern on their labor and delivery rotation.

OBGN 5645. AI: Operative Gynecology. Operative Gynecology seeks to integrate didactic and interactive teaching, consultative and inpatient management experience, benign gynecologic operative experience, and focused independent study to gain greater appreciation for and confidence in managing the following: 1) clinical presentation, 2) diagnostic evaluation, 3) clinical or surgical management, and 4) short or long term follow-up of common gynecologic problems. It also seeks to prepare the learner to function at the level of a Gyn intern prepared to competently perform core activities listed in the Learning Objectives.

OBGN 5655. ACE: Gynecologic Oncology. During this rotation, the student receives training in the management of gynecologic oncology patients. The student participates in the evaluation and treatment of patients, gaining experience in surgery, colposcopy, pathology, chemotherapy, and radiation techniques. The student will be primarily responsible for 2-3 inpatients at any given time under the direct supervision of the resident on service. By the end of the rotation, the student should be familiar with the staging of different gynecologic malignancies, common

treatment modalities, and important prognostic factors affecting survival. In addition, the student will be exposed to the immediate postoperative care of the acutely ill patient. Specific learning activities include pre- and postoperative care of the oncology surgical patient, assistance in the operative cases on the service, and attendance in the private clinics of the oncology attending.

OBGN 5660. ACE: Female Pelvic Medicine and Reconstructive Surgery. During this rotation the student receives training and practical experience in the diagnosis and management of pelvic floor defects and dysfunctions. The student will participate in preoperative evaluation, surgery, and post-operative follow-up of operative cases. In addition, there will be exposure to conservation treatment including pelvic floor rehabilitation and insertion/management of pessaries. History and physical exam of pelvic floor defects are also emphasized.

OBGN 5665. ACE: Operative Gynecology. Operative Gynecology seeks to integrate didactic and interactive teaching, general and specialty clinic experience, outpatient and inpatient management experience, and focused independent study to gain a more in depth appreciation for clinical presentation, diagnostic evaluation, clinical or surgical management, and short or long term follow-up of common gynecologic problems.

OBGN 6100. Special Clinical Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

OBGN 7100. AWAY ACE: Obstetrics/Gynecology. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

OBGN 7150. Special Research Study—Non-VU. Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

Oral and Maxillofacial Surgery

OMFS 5700. ACE: Oral and Maxillofacial Surgery. Oral and maxillofacial surgery is the clinical discipline that focuses on the management of diseases, deformities, injuries, and defects of the oral and facial structures. With elements of dentistry, medicine, anesthesia, and surgery, the ACE provides exposure to a wide array of clinical conditions ranging from lesions and conditions of the oral cavity, odontogenic head and neck infections, cleft palate, oral/facial reconstruction, total temporomandibular joint replacement, complex facial fractures to congenital and acquired deformities of the jaws and facial bones. Students will be active participants in clinical and didactic activities. Practice-based learning and systems-based practice methods will be emphasized. Students will have the opportunity to (1) enhance their fund of knowledge in clinically relevant overlapping areas of dentistry/oral surgery and medicine, (2) improve their working understanding of head and neck anatomy, (3) review common infections of the oral and head and neck region, (4) learn fundamental principles of head and neck reconstruction, and (5) participate in the delivery of clinic-based ambulatory anesthesia. Students will be expected to take facial trauma call.

OMFS 5701. Al: Oral and Maxillofacial Surgery. This Acting Internship focuses on the management of diseases, deformities, injuries, and defects of the oral and facial structures. With elements of dentistry, medicine, anesthesia, and surgery, the AI provides exposure to a wide array of clinical conditions ranging from lesions and conditions of the oral cavity, odontogenic head and neck infections, cleft palate, oral/facial reconstruction, total temporomandibular joint replacement, complex facial fractures to congenital and acquired deformities of the jaws and facial bones. Students will be active participants in clinical and didactic activities. Practicebased learning and systems-based practice methods will be emphasized. Students will have the opportunity to (1) enhance their fund of knowledge in of diseases, injuries, and congenital and acquired deformities of the oral and maxillofacial regions, (2) improve their working understanding of head and neck anatomy, (3) review common infections of the oral and head and neck region and principles of surgical and pharmacologic infection management, (4) learn fundamental principles of head and neck reconstruction, (5) apply principals of facial trauma patient evaluation and facial fracture

management, (6) participate in the delivery of comprehensive ambulatory oral surgical services, and (7) participate in the delivery of clinic-based ambulatory anesthesia and in the management of simulated anesthetic emergencies. Students will be expected to take facial trauma call. For students in the Oral Surgery Residency program only.

Ophthalmology and Visual Sciences

OPH 5320. Introduction to Ophthalmology. Students will join a team of attending and resident physicians on the Ophthalmology service at Vanderbilt Hospital. Ophthalmology involves working as a consultant and primary care physician to patients both in the hospital and in the clinics. Reasons for consultation requests vary, but common requests include retinal disease, glaucoma, infectious diseases, trauma, and congenital anomalies. There will be six choices of subspecialty services on which the student may rotate over the two weeks. These include retina, glaucoma, cornea, oculoplastics, neuro-ophthalmology/consults, and pediatrics. At the conclusion of the two-week elective, students will be able to take an ophthalmology history and physical examination, arrive at a diagnosis, and understand treatment plans. Additionally, students will have familiarity with evidence-based approaches to care and the role of an ophthalmology surgeon in a teaching hospital.

OPH 5610. ACE: Ophthalmology. Ophthalmology is a wonderful specialty, combining both medical and surgical care of the eye and the periocular structures. The ACE will allow medical students to participate in care delivered at the Vanderbilt Eye Institute, the Nashville Veterans' Affairs Hospital and the Vanderbilt University Hospital's inpatient and emergency room. Through shadowing attendings and performing ophthalmic exams, it is expected at the conclusion of the ACE a medical student will be able to (1) perform a basic slit-lamp examination and a dilated fundus examination with a direct ophthalmoscope, (2) have a working understanding of the major etiologies of vision loss in the United States, including cataracts, glaucoma, age-related macular degeneration, diabetic retinopathy and amblyopia, and (3) accurately diagnose common ophthalmic issues, including corneal abrasions, conjunctivitis and acute-angle closure glaucoma. Additionally, the societal impact of loss of vision on a person's activities of daily living, the reestablishment of independence following restoration of sight and the evolving role of the ophthalmologist providing this care should be appreciated by the medical student.

OPH 5622. ACE: Ophthalmology II. Ophthalmology is a wonderful specialty, combining both medical and surgical care of the eye and the periocular structures. The ACE will allow medical students to participate in care delivered at the Vanderbilt Eye Institute, the Nashville Veterans' Affairs Hospital and the Vanderbilt University Hospital's inpatient and emergency room. Through shadowing attendings and performing ophthalmic exams, it is expected at the conclusion of the ACE a medical student will be able to (1) perform a basic ocular history (2) perform a basic slit-lamp examination and a dilated fundus examination with a direct ophthalmoscope, (3) have a working understanding of the major etiologies of vision loss in the United States, including cataracts, glaucoma, age-related macular degeneration, diabetic retinopathy and amblyopia, and (4) accurately diagnose common ophthalmic issues, including corneal abrasions, tearing, conjunctivitis, superficial foreign body, ptosis and (5) accurately diagnose ophthalmic emergencies such as chemical burns, acute-angle closure glaucoma, central retinal artery occlusions, and various ocular traumas. Students will also be able to identify those ophthalmologic conditions that require consultation and referral. Additionally, the societal impact of loss of vision on a person's activities of daily living, the reestablishment of independence following restoration of sight and the evolving role of the ophthalmologist providing this care should be appreciated by the medical student.

OPH 6100. Special Clinical Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

OPH 7100. AWAY ACE: Ophthalmology. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

OPH 7150. Special Research Study—Non-VU. Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

Orthopaedic Surgery and Rehabilitation

ORTH 5325. Pediatric Sports Medicine. Students will spend time with various attendings in the pediatric orthopaedic, sports medicine, and adolescent clinics at Vanderbilt. They will also attend the sports medicine fellows lecture series and a sports event if available during the rotation. They will be expected to read Hoppenfeld's text—Physical Exam of the Spine and Extremities. Upon completion of the rotation, the students will be expected to understand the diagnosis and management of pediatric fractures, concussion, and overuse injuries. Students will perform a physical exam of the spine and extremities.

ORTH 5611. ACE: General Orthopedics. This course provides hands-on exposure to all aspects of orthopaedic surgery. The student will be able to integrate medical and surgical knowledge in the care of patients with musculoskeletal diseases in both inpatient and outpatient settings. Emphasis will be placed on initial evaluation, preoperative and postoperative management as well as intraoperative surgical procedures. Students will act as part of a multi-disciplinary team during this course. Students are also allowed to share the call experience where they are independently providing casting and splinting care and patient evaluations, . Exposure to musculoskeletal oncology and adult orthopaedics is incorporated. Didactic sessions are held for one hour each morning prior to surgical cases or clinic during which the student will be able to integrate medical and surgical knowledge in the care of patients.

ORTH 6100. Special Clinical Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

ORTH 7100. AWAY ACE: Orthopaedics. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

ORTH 7150. Special Research Study—Non-VU. Each student arranges an independent study with a mentor and completes a research project away from Vanderbilt. Approval required.

Otolaryngology

OTO 5310. Introduction to Otolaryngology. Students will join the attendings, fellows, and residents on the Head and Neck Division of the Department of Otolaryngology. This service provides surgical care for patients with benign and malignant tumors of the head and neck, including tumor resection and reconstruction, as well as airway reconstruction. It is a busy service which carries the largest inpatient census in our department. Students will see patients in the office and hospital setting, intraoperatively and post-operatively. Students will also have the opportunity to work with our speech pathologists and physical therapists as well. Students will participate in our weekly multi-disciplinary tumor board to better understand both surgical and non-surgical management of head and neck tumors. At the conclusion of the two weeks, students will be able to take a directed history, perform a basic head and neck examination, and observe and understand the basic surgical approaches to tumors of the head and neck. They will also understand basic reconstructive options for head and neck defects. Most importantly, they will understand the multidisciplinary approach to patients with head and neck cancers.

OTO 5315. Introduction to Laryngology. The human larynx is a very complex instrument and one that enables us to communicate with each other through speaking and song, as well as protecting our airway from aspiration during deglutition. We recognize each other through our voices and our unique, individual sound helps to define who we are. Technological advances allow us to study the larynx real time in the office and help us to offer patients highly specialized, individualized treatments based on the results of these studies. In this two-week elective, students will participate in the management of patients with disorders affecting the larynx and upper aerodigestive tract, including dysphonia, breathing difficulties, and

dysphagia. Students will work with a team of the attending, fellow, and resident physicians from the Vanderbilt Voice Center in both clinic and operating room settings. In the clinic, students will learn the specialized evaluation of the patient with a vocal, breathing, or swallowing complaint. Diagnosis and treatment of common laryngological disorders will be presented and discussed. The student will also interact with and observe the voice speech and language pathologists and vocal pedagogues that complete the multidisciplinary team of the Voice Center. These practitioners provide both diagnostic support and behavioral treatment for patients. Students will be exposed to diagnostic procedures, specifically indirect laryngoscopy and laryngeal videostroboscopy. In the operating room, students will observe endoscopic treatment of a variety of common laryngeal, upper airway, and esophageal disorders. These disorders may include benign vocal fold lesions, vocal fold paralysis, upper airway stenosis, and cervical esophageal stenosis. At the conclusion of the two-week rotation, students will be able to take a specialized laryngological history; perform a complete head and neck examination; discuss common disorders affecting the larynx, upper airway, and cervical esophagus; and describe the treatment of common disorders affecting the larynx, upper airway, and cervical esophagus.

OTO 5325. Clinical Rhinology. In this elective, students will have the opportunity to learn about nasal and sinus disorders and their relationship to diseases of the respiratory tract. Students will learn the pathophysiology of sinus disease and how nasal and sinus anatomy interact with allergy and other immunological diseases to affect the entire airway. The students will also learn how nasal anatomy affects patients in their ability to function in everyday life. The students will accompany the surgeon to the operating room to observe how endoscopic sinus surgery is performed. The elective will also include benign and malignant diseases of the sinuses and skull base. Students will focus on the anatomy of the skull base and the various pathologies seen clinically. Students will spend time with the skull base surgeon in both a clinical setting and the operating suite. Students will follow the patient from the time of surgery to the first post-operative appointment. In the clinics, students will learn about nasal and sinus endoscopy; CT and MR scans of the paranasal sinuses and skull base; physiology and bacteriology of the nose and sinuses and the close relationship with the lungs and pulmonary function; and medications available to treat nasal and sinus disorders. Students will also observe the allergist/immunologist. At the end of the two-week rotation, students will be knowledgeable of the common presenting symptoms of nasal and sinus disorders, and the anatomy and pathophysiology of nasal, sinus, and skull base disease. They will be able to read sinus CT and MR scans, and will be able to present a case concerning the presenting symptoms and diagnostic factors of a case and the available treatment paradigms.

OTO 5335. Introduction to Neurotologic Surgery. Neurotology is a subspecialty of otolaryngology (ENT) that deals with the evaluation and treatment of disorders of the ear, including adult and pediatric hearing loss, intracranial tumors, vertigo, facial nerve disorders, and complex infections of the ear. The specialty is multi-disciplinary and interacts frequently with other otolaryngology specialists and faculty and staff in neurosurgery, neurology, audiology, speech and language pathology, deaf education, physical therapy, and others. Students will participate in all aspects of the diagnosis and management of patients with neurotologic disorders. In the operating room students will be able to participate in and observe complex procedures such as cochlear implants, acoustic neuroma surgery, tympanic membrane reconstruction, stapedectomy, mastoidectomy and eradication of the ear, and vestibular surgery. Students will participate as members of our cochlear implant team, learning basic and advanced audiologic testing, cochlear implant evaluations, team assessment and integration, surgery, and post cochlear implant evaluation. Students will be able to participate in the activation of the cochlear implant, seeing adults and children hear for the first time. At the conclusion of the two -week rotation, students will be able to perform a specialized ear history and complex head, neck, and neurotology exams. They will be familiar with the disorders of the ear, including infections, hearing loss, vertigo, tinnitus, and intracranial tumors of the ear including meningioma, acoustic neuroma, and facial nerve disorders; the systems based practice involving multi-disciplinary care of neurotologic disorders, including working with the cochlear implant and surgical teams; surgical procedures involved with treating patients with complex otologic disorders; and the appropriate surgical set up, procedure, and equipment.

OTO 5340. Introduction to Facial Plastic and Reconstructive Surgery. Facial plastic and reconstructive surgery is an integral part of the training in Otolaryngology-Head and Neck Surgery. The face is the cornerstone of a person's identity. Facial expression implies a revelation about the characteristics of a person, a message about something internal to the expresser. The goal of facial plastic and reconstructive surgery is to restore, maintain, or enhance a patient's facial appearance. Students will participate in the management of patients with disorders affecting the face. Students will work with both attending and resident physicians from the division of Facial Plastic Surgery in both the clinic and the operating room. In the clinic, students will learn the specialized evaluation of the patient with congenital, malignant, traumatic, and medical conditions affecting various components of the face. Diagnosis and treatment of common facial disorders will be presented and discussed. Considerations of facial aesthetics will also be reviewed. In the operating room, students will observe treatment of a variety of common nasal, auricular and cutaneous disorders. These disorders may include facial fractures, nasal deformities, facial defects, and facial paralysis. At the conclusion of the two-week rotation, students should be able to take a specialized history pertinent to facial deformities; perform a complete head and neck examination; discuss common disorders affecting the nose, external ears, eyelids, lips, and facial skin; and describe the treatment options of common disorders amenable to facial plastic surgery.

OTO 5625. ACE: Otolaryngology. The Otolaryngology ACE is a surgical and medical course that offers immersion into the oldest medical speciality in the United States. This course deals with disorders of the ear, nose, and throat and involves the Head and Neck/Laryngology, Pediatric Otolaryngology, Rhinology/Plastic Surgery, and Otology services. Rotations provide the clinical complexity of various head and neck pathologies and explores medical and surgical treatment plans. The course will focus on the diagnosis, treatment, and management of many speciality specific disorders as well as primary care problems associated with pediatric and adult patients in the ambulatory, inpatient and operating room setting. Rotators will encounter disorders including ear disease and hearing loss, head and neck cancer, voice and communication disorders, obstructive sleep apnea, and airway abnormalities. The outpatient setting will enhance and reinforce a thorough head and neck examination, including the ear exam, and foster development of an Otolaryngologic assessment and plan. Additionally, students will be able to be involved with the inpatient otolaryngology team and aid in and observe operating room procedures. Students will have a unique look into the complexities of this speciality and become involved with the multi-disciplinary approaches to treatment with other team members including: audiologists, speech pathologists, radiologists, pulmonary and gastroenterology physicians.

OTO 6100. Special Clinical Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

OTO 7100. AWAY ACE: Otolaryngology. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

OTO 7150. Special Research Study—Non-VU. Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

Pathology

PATH 5310. Pathology as a Career. Physician practice in the field of pathology takes place within a diverse range of sub-disciplines under the general divisions of Anatomic Pathology (AP) and Clinical Pathology/ Laboratory Medicine (CP). The goal of this elective is to offer an introductory experience whereby students can participate in and observe the daily activities of multiple practice settings in both AP and CP. Opportunities exist for exposure in the areas of surgical pathology, cytopathology, autopsy pathology, hematopathology, molecular diagnostics, transfusion medicine, clinical microbiology, and clinical chemistry, among others. Attendance at intradepartmental educational conferences and relevant multidisciplinary clinical conferences will be strongly encouraged. At the completion of the rotation students will have a working understanding of the general role the pathologist plays within the greater context of patient care and will have gained insight toward consideration of pathology as a potential career choice.

PATH 5620. ACE: Anatomical Pathology. This four week Advanced Clinical Experience is designed to provide in-depth exposure to the practice of anatomic pathology via a mixture of services and is an ideal way to gain additional insight into the field for both those students considering pathology as a career and those who plan to pursue clinical specialties which frequently make use of pathology services. Depending on specific student interest and service availability, the setting for this clerkship may include the sub-specialty-oriented surgical pathology service at VUMC, the general surgical pathology service at the TVHS VA Hospital, the cytopathology service at VUMC, the pediatric surgical pathology service at Monroe Carrell Jr. Children's Hospital and the autopsy pathology service at VUMC. Emphasis is placed on introducing the student to the methods of specimen processing, evaluation and diagnosis in anatomic pathology with a particular focus on the relationship that anatomic pathologists maintain with clinical colleagues in the context of patient care efforts. Opportunities will exist for students to see a range of specimen types from fine needle aspiration biopsies to multi-organ resections and full autopsies. Students will work closely with pathology residents and fellows and will participate in a variety of tasks including pathologist performed biopsies, intra-operative consultations, gross specimen evaluation and selection of histologic sections for microscopic review. Additionally students will preview microscopic slides and dictate draft reports for selected cases and will subsequently participate in case review, ancillary test ordering/evaluation and final case sign out with the attending pathologist. Students will be expected to attend the various intradepartmental educational conferences in anatomic pathology as they occur.

PATH 5630. ACE: Clinical Pathology. Clinical pathology (also known as Laboratory Medicine) includes diverse laboratory services that provide diagnostic testing for all areas of medical practice. Services include transfusion medicine/blood bank, clinical chemistry, special chemistry (including toxicology), hematology and urinalysis, special hematology (bone marrow and lymph node analysis), coagulation, microbiology, virology, molecular infectious disease, molecular genetics, cytogenetics, and immunopathology (including flow cytometry). The student may rotate in one or multiple labs with training individualized according to their interest and future plans. Training consists of a mixture of observation and both didactic and case-based learning. At the end of the rotation, the student will have an understanding of efficient use and interpretation of diagnostic and monitoring tests in the areas of the lab through which the student has rotated.

PATH 5650. ACE: Clinical Microbiology. Medical microbiology is the subspecialty of pathology concerned primarily with the laboratory diagnosis, treatment, and control of infectious diseases. Medical students with an interest in medical microbiology, pathology, or infectious diseases may elect to do a rotation in medical microbiology. Formal training in medical microbiology at VUMC is administered by the Department of Pathology, Microbiology, and Immunology and consists of an integrated program of experiential and theoretical education in the laboratory diagnosis and management of infectious diseases. The program is designed to provide concurrent training in the technical, mechanistic, consultative, managerial, administrative, and pedagogical aspects of clinical microbiology throughout the pathology residency period. Thus, medical students and pathology residents are placed in a learning environment that synthesizes the spectrum of clinical microbiology precepts within the daily routines and reinforces fundamental interconnections between clinical infectious diseases, microbial pathogenesis, and laboratory diagnostic approaches. Further harmonization of concepts in medical microbiology is achieved via consistent, direct mentoring of trainees by program faculty, medical student and resident participation in conferences covering relevant topics in infectious diseases and diagnostic microbiology, and progressive increases in trainee responsibility commensurate with experience. The goal of individual rotations is to foster a detailed understanding by trainees of the biochemical, molecular, genetic, analytical, and engineering principles of contemporary testing methodologies and link these insights to the pathophysiology, clinical presentation, therapy, and prevention of microbial diseases.

PATH 5680. AE: Forensic Pathology. Join the Nashville Medical Examiner's Office for a month-long elective in one of the most fascinating areas of medicine, forensic pathology. Observe and participate in death-scene investigations, autopsies, and courtroom testimony. Learn about the important function a medical examiner's office plays in the protection of the public health of our community. This elective is not just for those who are interested in pathology, but also for all medical students who want to see how disease and trauma affect the human body. Prerequisite: Third year core clerkships. Fourth-year students only.

PATH 6100. Special Clinical Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

PATH 7100. AWAY ACE: Pathology. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

PATH 7150. Special Research Study—Non-VU. Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

Pediatrics

PED 5020. Pediatrics Core Clerkship. Each member of the secondyear class is assigned to Pediatrics for five and one-half weeks. Three and one-half weeks are spent on the Vanderbilt Children's Hospital inpatient pediatric wards. Students participate in all phases of diagnosis and treatment of a wide variety of illnesses of children and infants. Two and onehalf weeks of the clerkship includes work in pediatric clinics or Meharry Hospital or community sites. Besides teaching rounds on the wards and nursery, student lectures are held three times a week. Grand rounds are held weekly and chief resident rounds are held each Thursday.

PED 5310. Adolescent Medicine. Students will participate in an outpatient Adolescent and Young Adult Health Clinic with residents and faculty. The Adolescent clinic serves patients with a variety of health care needs including primary care, acute care, sports medicine, gynecological and contraceptive care, behavioral health, and eating disorders. Students will have the opportunity to see patients first and then work closely with faculty members to develop a care plan. Students can anticipate working in multidisciplinary teams and spending time with a variety of providers. Students can also expect to participate in didactic and case based learning sessions throughout the course. The goal of this elective is to familiarize students with the scope of adolescent health care. At the conclusion of the two-week elective, students will be able to take a complete and confidential psychosocial and gynecological history on adolescent patients. Additionally, students should be able to perform a focused physical exam and develop a patient plan of care in conjunction with the attending.

PED 5315. Pediatric Diabetes in Clinical and Research Setting. Students will join a team of attending and fellow physicians and scientists as they learn about management and discovery in pediatric diabetes. The management of diabetes in children occurs at the intersection of medical and support services. The care is managed by physicians, nurses, social workers, child life specialists, and psychologists. Within this intersection of care, the team is also dedicated to improving the management of diabetes through research. The goal of this short course is to introduce the students to this intersection. Students will participate in the initial evaluation and teaching of a patient with new onset diabetes, will be precepted in diabetes continuity clinic, and will attend clinical visits with dietitians, social workers, and psychologists. As an extension of this clinical exposure, students will learn about clinical research by attending our clinical research team meeting, receiving training in patient consent, and observing clinical trial visits. Students will also learn about the basic science of diabetes by participating in design, execution, and interpretation of research in the lab setting. At the conclusion of the elective, students will understand the presentation and management of diabetes through the contributions of a diverse provider team, the impact of diabetes on children and their families, and the opportunities for changing the course of diabetes through research from bench to bedside and back.

PED 5325. Physiology and Pathophysiology of the Newborn. This two-week elective will be scheduled for students who will be welcomed to the Neonatal Intensive Care Unit on the fourth floor of the Children's Hospital. The course will be a mix of didactic talks and readings as well as patient evaluations focused on the physiology and pathophysiology of oxygen delivery and gas exchange. The student will learn the principles of evaluation and treatment of a variety of cardiorespiratory disorders including respiratory failure, hyaline membrane disease, pneumonia, sepsis, various congenital heart diseases, and congenital malformations. The student will also be learning ventilation management and blood gas analysis and the basics of fluid, electrolyte, and nutrition management. These physiologic principles are universally applicable and not limited to neonatology. At the conclusion of the elective, students will be able to list five pathophysiologic mechanisms for hypoxic respiratory failure; interpret blood gases determining alveolar minute ventilation, acidosis status, and ventilatory means to correct abnormalities; write fluid electrolyte and parenteral nutrition orders demonstrating understanding of the reason behind including each component; and will understand the basics of physical examination and evaluation of the newborn infant and correlate the observations with the pathophysiology.

PED 5330. Pediatric Hematology-Oncology. Students will have a broad exposure to pediatric hematology-oncology on this rotation. The rotation is two weeks in length and will be inpatient both weeks. During the inpatient rotation, students will join a team of residents, fellows, and attending physicians on the pediatric hematology-oncology service at Vanderbilt Children's Hospital. Students will attend rounds and will see a broad range of both pediatric oncology and hematology diagnoses. Common reasons for oncology admissions are workups for possible oncology diagnoses, new diagnoses initiating treatment, chemotherapy administration, complications from treatment, and palliative care/death and dying. Common reasons for hematology admissions are diagnosis and management of bleeding disorders, workup for anemia and/or thrombocytopenia, and management of the complications of sickle cell disease. Students will also be able to participate in inpatient consults that will give additional exposure to hematologic/oncologic problems. At the conclusion of the two week elective, students will be able to do a history and physical examination on an oncology patient in the inpatient setting. Students will also be able to formulate a differential diagnosis for a new patient referral, both in hematology and oncology. Students will have an overall appreciation for the varied patient populations seen in pediatric hematology-oncology from both the family and the physician/medical team perspectives. Students will also have a broad exposure to the field of academic pediatric hematology-oncology.

PED 5331. Pediatric Stem Cell Transplantation. Students will have a broad exposure to pediatric stem cell transplant on this rotation. Students will do a two-week rotation that includes both the inpatient and outpatient settings. During the inpatient time, students will join a team of fellows and attending physicians on the pediatric stem cell transplant service at Vanderbilt Children's Hospital. Students will attend rounds and will see a patient at all stages of stem cell transplant (pre-, peri- and post) for broad range of both pediatric oncology and nonmalignant diagnoses. Common reasons for admissions on this service are stem cell transplantation, complications from treatment, and palliative care/death and dying. During the outpatient time, students will attend all pediatric stem cell transplant clinics. Clinic opportunities are vast and will include exposure to patients who are being considered for stem cell transplant, post-transplant sick visits, and hospital follow-up. New referrals will also be seen. At the conclusion of the two-week elective, students will be able to do a history and physical examination on a stem cell transplant patient in both the inpatient and outpatient settings. Students will also be able to formulate a differential diagnosis for presenting signs and symptoms and to understand which patients are considered stem cell transplant candidates. Students will have an overall appreciation for the varied patient populations seen in pediatric stem cell transplantation from both the family and the physician/ medical team perspectives. Students will also have a broad exposure to the field of academic pediatric stem cell transplantation.

PED 5335. Obesity Across the Life Stages: Before Breast Feeding to Bariatrics. Obesity is a condition of high prevalence worldwide. Most medical providers encounter it or one of its many co-morbidities on a

daily basis. Its etiology is complex, with risk and disease development beginning before birth and progressing across the lifespan. In this elective students will be exposed to the evolution of this disease across these life stages, highlighting clear opportunities for prevention and treatment. Students will participate in a variety of clinical settings, which range from general to subspecialty, and from medical to surgical. Through these clinical experiences and a core of didactics, students will learn key points of intervention such as maternal nutrition (obstetrics), breastfeeding (newborn nursery lactation consultation), obesity treatment (multidisciplinary pediatric and adult weight management clinics, bariatric surgery), and management of its co-morbidities (lipid and endocrinology clinics). At the conclusion of the two-week elective, students will understand how obesity evolves across the lifespan, identifying opportunities for prevention and treatment; how to perform an obesity-specific assessment of patients of all ages through history taking, physical exams, and data interpretation; and how the multidisciplinary nature of treatment options can be approached through interpersonal interactions with patients, families, and members of the clinical teams.

PED 5340. Pediatric Patient and Family Engagement Consultation Service. This elective involves working with a multidisciplinary consultation team devoted to engaging pediatric patients and their families in managing their health through educational interventions and health information technologies. Consultations focus on understanding the health-related needs of the families of hospitalized pediatric patients and developing strategies to meet those needs based on patient and parental characteristics, capacities, and preferences. With each new consultation, students will independently evaluate the patient and family, present the case to a multi-disciplinary team, explore resources to address their health-related needs, and work with the family to implement the proposed solutions during hospitalization. Medical students will work with a variety of pediatric providers in the inpatient and acute care settings, and they will learn to educate and support families with new diagnoses and chronic illnesses using apps, the My Health at Vanderbilt patient portal, or other technologies and educational tools. At the end of this rotation, the student will have an appreciation of the broad array of health-related needs that challenge the families of ill children, an understanding of the concept of patient activation and its role in patient and family engagement, and familiarity with use of education and health information technologies in the promotion of health and management of disease. Students will have unique opportunities to learn about a broad array of barriers to optimal care, to gain experience with assessing and managing social determinants of health, and to impact directly the care of the families involved in the consultations.

PED 5345. Pediatric Cardiology. Students participating in this twoweek elective will be exposed to the breadth of services offered by the medical and surgical teams caring for children with congenital and acquired heart conditions. Selected faculty members and at times senior cardiology fellows will provide didactic and clinical insight relative to their area of expertise. Such areas include but are not limited to noninvasive imaging (echocardiography, MRI), cardiac catheterization, and electrocardiography- the primary areas whereby cardiac structure, hemodynamics and rhythm are assessed. The goal is to provide consistent core didactics and readings, supplemented with an introduction to basic cardiac assessment in the outpatient and inpatient settings. Students will be afforded an opportunity to observe the interaction of multiple team members working toward the optimal patient care plan using a variety of diagnostic and imaging modalities. At the conclusion of the elective, students will have acquired a basic understanding of how abnormalities of cardiac structure and function impact the well-being of the pediatric patient through the care continuum. Though many principles are pediatric-specific, common concepts are shared with adult medicine as well. Students will also understand basic cardiac assessment in the infant, child and adolescent, primarily in the outpatient setting including history, physical exam, and appropriate use of diagnostic studies.

PED 5395. Pediatric Special Study. Supervised 2-week special clinical study in Pediatrics.

PED 5611. Al: Pediatric Medicine. The Pediatric Acting Internship is a course designed to give students a more robust experience of serving as an active member of the inpatient pediatric ward teams. Students

will assume intern responsibilities with the supervision and countersignature of notes and orders by upper level residents, as well as participate in daily teaching conferences. Students will be assigned a number of long day shifts and a series of night shifts, with a maximum of four days off during the four week period. Patient assignments will be at the level of a census closer to that of an intern to provide increased responsibility and ensure readiness for residency. In order to ensure the strong clinical experience which characterizes this course, each position is built into the pediatrics house staff rotational schedule. Therefore, the pediatric service relies heavily on each student who is accepted into this course. We ask that each student consider his/her enrollment as a strong commitment to serve; add/drops will not be permitted.

PED 5612. ACE: Adolescent Medicine. Adolescent Medicine is a unique subspecialty in pediatrics in that it combines both primary care with consultative care for adolescents and young adults ages 12 to 22 years of age. During this ACE students will have the opportunity to learn comprehensive care of the adolescent using both a primary care and a multidisciplinary team approach. Students will have the ability to function within the Adolescent/Young Adult Clinic and will be exposed to a multidisciplinary team which includes a social worker, nutritionist and psychiatrist in conjunction with an adolescent medicine physician. At the end of the course, students will feel comfortable performing a complete psychosocial assessment of an adolescent using the HEADDSS assessment tool. They will have the opportunity to provide primary and basic gynecologic care for adolescents to include (1) how to perform a sports clearance exam; (2) how to take an appropriate menstrual history and screen for menstrual disorders; (3) how to take an appropriate sexual history; (4) how to counsel an adolescent on contraception. Students will also gain experience in the care of adolescents/young adults with eating disorders and major depression. Evaluations will be based on the student's ability to take a complete and appropriate history/physical and develop a cohesive and appropriate treatment plan. This course will fulfill the primary care requirement.

PED 5615. ACE: General Pediatric Neurology. Students will participate in a four-week pediatric neurology advanced clinical experience with a flexible schedule that will allow students to pursue specific interests. Given student interests, the schedule will be individually tailored through discussion/ planning with the ACE director and involve participation in the following venues: outpatient pediatric neurology clinic and the inpatient teams encompassing pediatric neurology, pediatric epilepsy, and critical care.

PED 5620. ACE: Pediatric Epilepsy. Pediatric Epilepsy Advanced Clinical Experience (PEACE) is an exciting multi-disciplinary specialty that encompasses pediatric neurology, neurosurgery, neuroradiology and neuropathology. Patients present with seizure onset ranging from birth into young adulthood. While due to many etiologies, most patients do well with standard medications achieving excellent seizure control. However, a substantial subset requires additional evaluations as well as dietary or surgical approaches. PEACE students will function within inpatient and outpatient clinical teams, as well as participate in divisional teaching conferences and also learn basic EEG reading skills. PEACE students will (1) deepen their understanding mechanisms causing epilepsy in children, (2) learn the basic principles of EEG reading and medical management of epilepsy in children, and (3) participate in multi-disciplinary evaluations of patents with epilepsy and participate in neurosurgical assessments and procedures.

PED 5625. ACE: Patient and Family Engagement Consult. Students in this course will participate in patient and family engagement consultations for children and adults admitted to the Monroe Carell Jr. Children's Hospital at Vanderbilt (VCH) and Vanderbilt University Hospital. The purpose of this ACE is to provide the student with an understanding of the importance of patient and caregiver engagement for optimal health and healthcare, knowledge about the developmental process of patient and caregiver activation, and experience with recommending educational and technological interventions to promote engagement and meet health-related needs. Participation in inpatient consultations will facilitate training in promoting engagement in pediatric and adult patients with a wide variety of clinical diagnoses. Didactic experiences that will reinforce the patient care experiences include our weekly multidisciplinary Patient and Family Engagement Consultation Team Meeting, weekly Biomedical Informatics Seminar, and clinical conferences relevant to the patients being seen in consultation.

PED 5635. ACE: Pediatric Hematology/Oncology. Once students have finished this ACE, they will have a better understanding of the pathology, treatment, and survival of common childhood cancers. They will also gain experience in working up and treating anemias and bleeding disorders. These objectives are accomplished through a combination of inpatient time and outpatient time. Half of the course will be on the inpatient service where the students will be expected to follow their own patients, present on rounds, write daily progress notes, and prepare a short 10-15 minute discussion of a patient of interest. The student should also participate in walk rounds with the fellow and faculty for more informal discussion. The other half of the course will be in the outpatient clinic. While there, the student will see both new patients and patients returning for therapy. The student will take a history from the family, perform a physical exam, interpret lab tests, present these patients to the faculty, and write notes. The student will also have the opportunity to attend "specialty" clinics to see a group of patients with a focused set of problems (for example sickle cell clinic).

PED 5680. ACE: Pediatric Cardiology. The advanced clinical experience in pediatric cardiology is a four week course that aims to expose medical students to the broad spectrum of cardiac disease in children. The students will spend two weeks on the inpatient service getting exposure to acute cardiac disease and their care during perioperative period. Students will be responsible examining patients, presenting in rounds, and participating in the team care of the patients. An additional two weeks will be spent focusing on the outpatient side of cardiology. The student will participate in a variety of different cardiology outpatient clinics. Throughout the experience, the student will have the opportunity to accompany the inpatient cardiology fellow on inpatient consults. There will also be opportunity to watch cardiac catheterizations, watch a cardiac surgery, and spend time in the echocardiography laboratory.

PED 5690. ACE: Pediatric Endocrinology. Pediatric Endocrinology is a wonderful sub specialty of Pediatrics which involves studying about and caring for patients who have abnormalities involving hormonal regulation of basic body systems. Students will study physiology, pathology, molecular biology, genetics and pharmacology during the time they care for these patients. Some examples of endocrine disorders they will be expected to learn about will include: growth and pubertal disorders, disturbances in calcium homeostasis, hypo and hyperthyroidism, adrenal disorders, some disorders of sexual development and common disorders of glucose regulation. Students will also learn about how to manage acutely ill pediatric diabetes patients in the hospital setting and they will learn the fundamentals of chronic, out-patient diabetes management. Under the supervision of the endocrine attending physician, students will see patients in the outpatient endocrine and diabetes clinics, and they will be an integral part of our ward team on the inpatient Endocrine service.

PED 5710. ACE: Pediatric Gastroenterology. The Pediatric Gastroenterology Advanced Clinical Experience (ACE) provides exposure to a broad range of gastrointestinal, nutritional, and liver diseases in both the inpatient and ambulatory settings. Students will have the opportunity to observe and participate in outpatient evaluations of infants and children referred to the pediatric gastroenterology clinic under the direct supervision of faculty attending pediatric gastroenterologist, attend endoscopic procedures, participate in inpatient pediatric gastroenterology inpatient care and consults, and attend scheduled divisional didactic conferences. The rotation provides students with experience in the workup of common pediatric symptom complexes such as abdominal pain, vomiting, diarrhea, jaundice, and many other common complaints, as well as the opportunity to participate in multidisciplinary care of complex gastrointestinal disorders such as inflammatory bowel disease and chronic liver disease. Attendance in the endoscopy suite allows familiarity with esophagogastroduodenoscopy, colonoscopy, polypectomy, and rectal suction biopsy. The rotation will include core reading on the pathophysiology and management of important gastrointestinal diseases such as inflammatory bowel disease, biliary atresia, and short bowel syndrome. The student will prepare one in-depth talk on a gastrointestinal topic of their choice and receive feedback from the attending on the content and delivery.

PED 5720. ACE: Pediatric Nephrology. Pediatric Nephrology is an exciting specialty that functions at the intersection of renal physiology, pathology, anatomy, genetics, pharmacology, and immunology. Students who participate in this Advanced Clinical Experience will actively participate in the evaluation and management of patients who demonstrate the consequences of alterations in renal development and the genes that direct development. Students will have the opportunity to see in inpatients and outpatients with acute and chronic alterations in renal physiology including those with acute kidney injury, hypertension, glomerulonephritis, and chronic kidney disease in addition to those with congenital abnormalities of the kidney and urinary tract. Advanced understanding of renal physiology and pathophysiology will be an asset in any career path, because the kidney controls homeostasis for the entire body.

PED 5730. AE: Child Abuse Pediatric Medicine. Child Abuse Pediatrics is a pediatric subspecialty dealing with the medical evaluation, diagnosis, and treatment of abused and/or neglected children. Students will be a part of the Child Abuse Evaluation and Response Team based at Monroe Carrell Jr. Children's Hospital at Vanderbilt. In addition to participating in medical evaluations of children referred due to concerns of possible abuse and/or neglect, students will also be able to observe court testimony, attend forensic interviews, and participate in multidisciplinary meetings with DCS and law enforcement. Students will be expected to 1) learn how to perform a basic child abuse evaluation, including taking a thorough history and performing a full physical exam with photodocumentation, 2) learn the importance of injury biomechanics, and 3) gain an understanding of the biopsychosocial aspects of child abuse and neglect.

PED 5740. ACE: Pediatric Pulmonary Medicine. We welcome students interested in greater exposure to pediatrics in the context of pediatric pulmonary medicine. The purpose of this ACE is for students to gain expertise in the clinical evaluation of pulmonary disease in infants, children, and adolescents through experiences in the hospital and the outpatient clinic. Students will have the opportunity to participate in bronchoscopies and also in specialized multi-disciplinary clinics in cystic fibrosis, aerodigestive disease, pulmonary hypertension, and interstitial lung disease. The Division's weekly didactic conferences will reinforce the patient care experiences.

PED 5750. ACE: Pediatric Rheumatology. Students will participate in the evaluation and care of children referred to the pediatric rheumatology program at Vanderbilt Children's Hospital. The experience will involve direct interactions with patients and their families in both the inpatient and outpatient settings. Students will also have the opportunity to participate in divisional conferences in which patient cases and radiographic studies are discussed, and recent journal articles are reviewed. Over the course of the month, the student will gain an understanding of the presenting symptoms, exam findings, and laboratory studies of autoimmune diseases in children, as well as current treatment strategies. Through these clinical experiences, the student will gain insight into the impact of chronic disease on children and their families. The clerkship will also afford the student a unique opportunity to gain experience with the fundamentals of the musculoskeletal exam, which has broad application outside of rheumatology. Prerequisite: Pediatrics 5020. Fourth year.

PED 5760. ACE: Spanish Language Pediatric Clinic. Demographics in the USA are changing and Latinos are now the fastest and largest growing minority group in the United States. Students need to be prepared to provide effective care to Spanish speaking population. This ACE offers student the opportunity to function within the Primary care pediatric clinic as they participate in well-child visits and acute visits for Spanish speaking families, as well as exposes students to community resources that are targeted to this population. The course will focus on 1) enhancing students fluency in Spanish, 2) learning appropriate medical terminology for developmental screening, anticipatory guidance, and explaining disease processes, 3) learn about immigrant experience (Immigration process, Barriers to access to care, Education and Culture), and 4) Explore various views of disease within this population, including alternative health beliefs, use of alternative medicines and therapies, and traditional interaction with medical professionals. In addition student will be expected to participate in a small project.

PED 5800. ACE: Developmental Pediatrics and Genetics. The combined Developmental Pediatrics and Genetics ACE will blend two specialties that are important in all facets of Pediatric Medicine. This course is primarily an outpatient experience that allows students to assess and diagnosis children who have developmental and genetic concerns. Students will work within multidisciplinary teams and have the opportunity to learn the roles of other medical providers that their patients might work with including therapists, psychologists, genetic counselors, nurse practitioners, and dieticians. During the genetics portion of the course, students will assist in diagnosis and managing children with complex genetic diseases. Students will have the opportunity to (1) deepen their knowledge of genetic conditions including dysmorphology, biochemical genetics, single gene disorders, and chromosomal disorders, (2) assess family histories, (3) participate in the medical intake that can help lead to a diagnosis, and (4) learn resources they can use throughout their career when working with patients with genetic conditions. During the developmental pediatrics portion of this course, students will start to become familiar with typical and atypical courses of childhood development. The goal of this rotation is to teach medical students how to (1) take a developmental history, (2) assess how a child is functioning currently, (3) understand what interventions that are likely to help the child make developmental progress and (4) be familiar with certain developmental disabilities that are common in our society, including Autism Spectrum Disorders and Down Syndrome.

PED 5815. Al: Neonatology. Neonatologists care for newborns with a wide variety of conditions, ranging from prematurity to surgical conditions, infections to congenital cardiac disease, and respiratory distress to genetic disorders. Students in this rotation will work in the Children's Hospital Neonatal Intensive Care Unit on the Red Team. The Red Team cares for patients primarily with congenital heart disease, surgical and genetic disorders. This team does not attend deliveries. The AI will provide care for 3-5 patients with a wide range of conditions. The AI will be expected to pre-round on all patients, write orders and assist with TPN orders, review X-rays and lab results and contact and interact with consultants. He or she will be required to write History and Physicals, Daily Progress Notes, and Discharge Summaries. This is a high intensity AI with very complex and sick infants and is only recommended for the highly motivated and extremely responsible AI with an interest in neonatal medicine. It is best suited for the student considering a career in neonatology or pediatric critical care or another pediatric subspecialty. Schedule is 6 a.m.-6 p.m., six days per week. There is no overnight call. Days off are scheduled with team members upon starting the rotation. Daily multi-specialty rounds starts with both cardiology and NICU attendings at 8:30am. Required lectures are Monday, Wednesday and Thursday mornings at 7:45-8:15am and weekly simulation sessions are generally on Fridays 7:45-8:30am. Topics which will be covered and which the AI must read about include: respiratory distress syndrome, ventilator management, surgical conditions in the newborn, congenital heart disease in the newborn, nutrition of the premature infant, apnea of prematurity, jaundice and anemia in the newborn. The AI must set up biweekly review with his or her NICU attending at beginning of rotation to review written notes and daily performance. He or she will also be required to give a weekly brief talk to the team on a relevant topic of choice. Recommended reading is Fanaroff and Martin's Neonatal-Perinatal Medicine, which is available through the digital library. Volume 2 contains the conditions by organ system.

PED 5830. ACE: Pediatric Emergency Medicine. Pediatric Emergency Medicine physicians need to be prepared to care for minor ailments to life-threatening events. The Pediatric Emergency Department rotation will expose students to a wide variety of patient pathology in a fast paced setting. Students will simultaneously obtain a history and perform a physical exam on pediatric patients from newborn to adolescence. Under the direct supervision of attendings, fellows and senior residents, students will exercise critical thinking and develop differential diagnosis, management and disposition for pediatric patients presenting with medical illnesses, surgical workups, traumatic injuries and psychiatric issues. The course will focus on common infectious diseases, pediatric surgical/orthopedic emergencies and toxicology emergencies. The student will increase their communication skills with children, families, consultants and emergency medicine staff. Students will participate under supervision in common procedures in pediatric emergency medicine such as suturing, sedation, and splinting of extremity injuries. Students work fourteen 8 hour shifts which may include weekends and overnights. Students may also participate in

weekly fellow conferences as well as journal clubs and simulation scenarios. Fulfills the acute care course requirement.

PED 5910. ACE: Pediatric Infectious Diseases. The Pediatric Infectious Diseases (PID) Advanced Clinical Experience (ACE) provides students the opportunity to evaluate and participate in the management of children with a wide range of suspected or proven infectious diseases. The PID rotation allows the learner to gain experience in the workup of common symptom complexes such as prolonged fever, joint pain / limp, respiratory illnesses, rash, and many other common pediatric presentations. The rotation also provides valuable experience in the pharmacology and pharmacodynamics of antimicrobial agents, as well as the proper use and potential adverse effects of these commonly prescribed drugs. The rotation will include core reading on the pathophysiology and management of infectious diseases such as meningitis, osteomyelitis, and pneumonia. Students will actively participate in the evaluation and management of children on the PID service in both the ambulatory and inpatient settings.

PED 5990. ACE: Pediatric Critical Care. Pediatric Critical Care is an exciting specialty that cares for the sickest patients from birth into young adulthood. The Pediatric Intensive Care Unit (PICU) and the Pediatric Cardiac Intensive Care Unit (PCICU) both offer unique blends of physiology, pharmacology and pathology in disease processes ranging from to sepsis, respiratory failure, and traumatic brain injury to congenital heart disease and its repair. Students will have the opportunity to function within the PICU and/or PCICU clinical teams, as well as participate in divisional teaching conferences. The course will focus on enhancing student clinical practice-based learning skills. Students will have the opportunity to (1) deepen understanding of the complex pathophysiology of critically ill children, (2) learn the basic principles of multidisciplinary management and resuscitation of critically ill children, and (3) review common diseases seen in a busy pediatric critical care unit. Additionally, students will be expected to stay for overnight call at least four times during the four-week rotation. This course will fulfill the acute care requirement.

PED 6001. Vanderbilt Consortium LEND (VCL) Core Curriculum Modules 1. The primary formal education portion of the VCL is the core curriculum: weekly modules and in-person core curriculum seminars at the end of each unit. Each weekly module on the LEND Moodle contains objectives, required readings or other activities, and several questions. Students, including the medical student(s) in this certificate program, are assigned to interprofessional groups of six to seven trainees, and each group submits group answers to the questions at the end of each week. On a rotating basis, each week one of the trainees serves as a group leader to maintain group accountability and productivity. For each question in the module, one trainee writes a draft response, then a second trainee reviews and edits the response. The leader compiles and formats all edited responses, provides an opportunity for the group to edit the entire answer set, and then uploads the answer set to the LEND Moodle by the deadline. The following week the faculty facilitators for the module provide feedback to the group within the documents submitted and uploads the document with the feedback into the module forum. All groups can review the feedback provided to every group. At the end of every given unit of study, there is an in-person seminar facilitated by expert LEND faculty. These seminars provide an opportunity for the interprofessional groups to work together to apply what they learned from the weekly modules to clinical cases. Anonymous peer assessments are completed at the end of each semester to maintain individual accountability and to provide feedback on leadership skills, communication skills, and professionalism. This blended educational experience combines online, asynchronous, and team-based assignments with in-person, case-based interprofessional teamwork to provide a rigorous comprehensive curriculum in neurodevelopmental disabilities.

PED 6002. Vanderbilt Consortium LEND (VCL) Core Curriculum Modules 2. The primary formal education portion of the VCL is the core curriculum: weekly modules and in-person core curriculum seminars at the end of each unit. Each weekly module on the LEND Moodle contains objectives, required readings or other activities, and several questions. Students, including the medical student(s) in this certificate program, are assigned to interprofessional groups of six to seven trainees, and each group submits group answers to the questions at the end of each week. On a rotating basis, each week one of the trainees serves as a group leader to maintain group accountability and productivity. For each question in the module, one trainee writes a draft response, then a second trainee reviews and edits the response. The leader compiles and formats all edited responses, provides an opportunity for the group to edit the entire answer set, and then uploads the answer set to the LEND Moodle by the deadline. The following week the faculty facilitators for the module provide feedback to the group within the documents submitted and uploads the document with the feedback into the module forum. All groups can review the feedback provided to every group. At the end of every given unit of study, there is an in-person seminar facilitated by expert LEND faculty. These seminars provide an opportunity for the interprofessional groups to work together to apply what they learned from the weekly modules to clinical cases. Anonymous peer assessments are completed at the end of each semester to maintain individual accountability and to provide feedback on leadership skills, communication skills, and professionalism. This blended educational experience combines online, asynchronous, and team-based assignments with in-person, case-based interprofessional teamwork to provide a rigorous comprehensive curriculum in neurodevelopmental disabilities.

PED 6003. Vanderbilt Consortium LEND (VCL) Leadership Seminars 1. The Leadership series fosters development of effective leadership competencies by providing opportunities for students to read researchbased leadership, business administration and management, and organizational psychology literature that they would not be exposed to in their primary professional training. They glean leadership skills by teaching each other the material in the required readings; discussing case scenarios in their interprofessional groups; practicing communication skills, advocacy, negotiation skills, and conflict resolution through role playing and group discussions; and applying the knowledge and skills taught in the leadership seminar to a personal or professional situation. LEND faculty members in each group also provide training in leadership by modeling leadership skills as well as sharing their personal leadership experiences during the evening seminars and in their responses to the trainees' critical reflections. Content for each monthly Leadership Seminar on the LEND Moodle contains learning objectives and required readings or other activities that are completed before each two-hour evening seminar. Readings are chosen from the seminal leadership, business and management, orgainizational psychology, and neuroscience literature. Students, including the medical student(s) in this certificate program, are assigned to interprofessional groups of six to seven for the Leadership Seminars; the groups are different than the Core Curriculum groups so the trainees have experience working in different interprofessional teams. Each team is facilitated by two LEND faculty from diverse professions, and each session is led by the LEND director. The formats for the evening seminars include small group case-based discussions, role-playing, and large group debriefs and discussions. After each session, each trainee applies the concepts or principles taught in the session to a scenario in her or his personal or professional life and writes a one-page critical reflection paper on which a faculty member provides feedback.

PED 6004. Vanderbilt Consortium LEND (VCL) Leadership Seminars 2. The Leadership series fosters development of effective leadership competencies by providing opportunities for students to read researchbased leadership, business administration and management, and organizational psychology literature that they would not be exposed to in their primary professional training. They glean leadership skills by teaching each other the material in the required readings; discussing case scenarios in their interprofessional groups; practicing communication skills, advocacy, negotiation skills, and conflict resolution through role playing and group discussions; and applying the knowledge and skills taught in the leadership seminar to a personal or professional situation. LEND faculty members in each group also provide training in leadership by modeling leadership skills as well as sharing their personal leadership experiences during the evening seminars and in their responses to the trainees' critical reflections. Content for each monthly Leadership Seminar on the LEND Moodle contains learning objectives and required readings or other activities that are completed before each two-hour evening seminar. Readings are chosen from the seminal leadership, business and management, organizational psychology, and neuroscience literature. Students, including the

medical student(s) in this certificate program, are assigned to interprofessional groups of six to seven for the Leadership Seminars; the groups are different than the Core Curriculum groups so the trainees have experience working in different interprofessional teams. Each team is facilitated by two LEND faculty from diverse professions, and each session is led by the LEND director. The formats for the evening seminars include small group case-based discussions, role-playing, and large group debriefs and discussions. After each session, each trainee applies the concepts or principles taught in the session to a scenario in her or his personal or professional life and writes a one-page critical reflection paper on which a faculty member provides feedback.

PED 6005. Vanderbilt Consortium LEND (VCL) Care Navigation

1. In this course learners in the VCL learn about the health care system, community services, and the social determinants of health in individuals with NDD by providing care navigation throughout the academic year to a small panel of patients seen in a local clinic. The experience will include conducting navigation interviews with the families, home visits, clinic visit, and identification of local resources that can help patients with neurode-velopmental disabilities and their families.

PED 6006. Vanderbilt Consortium LEND (VCL) Care Navigation

2. In this course learners in the VCL learn about the health care system, community services, and the social determinants of health in individuals with NDD by providing care navigation throughout the academic year to a small panel of patients seen in a local clinic. The experience will include conducting navigation interviews with the families, home visits, clinic visit, and identification of local resources that can help patients with neurode-velopmental disabilities and their families.

PED 6100. Special Clinical Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

PED 7100. AWAY ACE: Pediatrics. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

PED 7150. Special Research Study—Non-VU. Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

Preventive Medicine

PM 7100. AWAY ACE: Preventive Medicine. Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

Physical Medicine and Rehabilitation

PMR 5310. Principles of Physical Medicine and Rehabilitation. This course is designed to provide exposure to the practice of physical medicine and rehabilitation (PM&R) with an emphasis on musculoskeletal and neurological rehabilitation. Many of these patients have had acute illness, trauma, surgical procedures, and prolonged hospitalization and require inpatient and/or outpatient rehabilitation. The student will be asked to participate in a series of introductory lectures as well as rounds, clinics, and case discussions. The attending physician on the PM&R service will define participation in patient care. The student will be expected to participate in the evaluation of individuals with significant impairment and disability such as spinal cord injury, traumatic brain injury, stroke, amputations/complex fractures, multiple trauma and general debility. Outpatient clinics are available to expose students to the long-term problems which these patients encounter. At the conclusion of the two weeks, students will be able to take a PM&R oriented history; perform a physical examination with an emphasis on functional status and disability; formulate rehabilitation goals; and understand the importance of rehabilitation as part of the post-acute care continuum.

PMR 5611. ACE: Introduction to PM&R. Hands-on exposure to the practice of physical medicine and rehabilitation (PM&R) with an emphasis on musculoskeletal and neurological rehabilitation is offered in this course. Many of our patients have had acute illness, trauma, surgical procedures,

and hospitalization and the student will have an opportunity to follow the patients post-acutely. The primary responsibility is the care of those patients with spinal cord injury, stroke, amputations/complex fractures, multiple trauma, traumatic brain injury, and general debilitation. The attending physician on the PM&R Service will define participation in patient care. The student will be expected to [1] participate in the evaluation, functional diagnosis, and treatment of individuals with significant impairment and disability who require long-term hospitalization to achieve maximal independence and [2] Integrate medical and surgical knowledge in the care of patients in the hospital for rehabilitation and in the outpatient clinic. Additionally, adult and pediatric outpatient clinics are available to expose students to the long-term problems which these patients encounter.

PMR 5615. Al: Physical Medicine and Rehabilitation. This Acting Internship will include hands-on exposure to the practice of physical medicine and rehabilitation (PM&R) with an emphasis on musculoskeletal and neurological rehabilitation. Many of our patients have had acute illness, trauma, surgical procedures, and hospitalization. The student will have an opportunity to follow the patients post-acutely. The primary responsibility is the care of adult and pediatric patients with spinal cord injury, stroke, amputations/complex fractures, multiple trauma, traumatic brain injury, and general debilitation. The attending physician on the PM&R Service will define participation in patient care. The student will be expected to [1] Participate in the evaluation, functional diagnosis, and treatment of individuals with significant impairment and disability who require long-term hospitalization to achieve maximal independence. [2] Integrate medical and surgical knowledge in the care of patients in the hospital for rehabilitation and in the outpatient clinic. Additionally, adult and pediatric outpatient clinics are available to expose students to the long-term problems, which these patients encounter.

PMR 7100. AWAY ACE: Physical Medicine and Rehabilitation. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

Psychiatry

PSYCH 5020. Psychiatry Core Clerkship. Basic goals of this clerkship which includes psychiatry clinical rotations are to learn the fundamental techniques of psychiatric assessment, differential diagnosis, and treatment intervention. Activities include direct patient care and clinical rounds in the company of assigned faculty. The five 1/2-week placements include Vanderbilt University Hospital, Vanderbilt Psychiatric Hospital at Vanderbilt (Adult/Adolescent/Child). Second year.

PSYCH 5310. Introduction to Addiction Psychiatry. This two-week elective will offer students an opportunity to join a team of physicians on the Addiction Psychiatry service at Vanderbilt Psychiatric Hospital (VPH). The clinical team will be caring for patients admitted to the hospital for detoxification, diagnosis, and psychiatric stabilization and treatment planning. As substance use disorders often co-occur with depression, bipolar illness, organic brain disorders, and anxiety disorders (especially posttraumatic stress disorders, sometimes with sexual and eating disorders), the addiction psychiatry experience will expose students to a variety of common psychiatric problems. Students will be interacting with inpatients, learning about detoxification protocols, as well as seeing patients in follow up outpatient addiction clinics. Students may sit in on treatment groups for opiate dependent patients and attend a nearby Narcotics Anonymous support meeting. At the conclusion of the elective, students will be able to take a psychiatric history, perform a mental status examination, and know the basics of case formulation. Additionally, students will have familiarity with evidence-based approaches to care, understanding the role of an addiction psychiatrist as well as how addiction may present to physicians practicing in many specialties of medicine and surgery.

PSYCH 5620. ACE: Neuropsychiatry. This advanced clerkship (elected after completing rotations in both neurology and psychiatry) is an introduction to clinical practice and research at the interface of psychiatry and neurology. Under supervision, the student will examine patients with psychiatric and neurologic diseases affecting emotions, such as temporolimbic epilepsy, frontal lobe lesions, strokes in the non-dominant hemisphere, or degenerative conditions such as Alzheimer's Disease, Parkinson's Disease,

vascular dementia, and Huntington's Disease. Readings will focus on the neurology of emotion, including functional neuroanatomy, experimental neuropsychology, and electrophysiology. The student may participate in research protocols involving quantitative behavioral assessment, autonomic measures, and structural and metabolic imaging of the brain. Each experience in this clerkship is unique and will be tailored to the specific interests of the student. Consequently, we can only accept one student per rotation.

PSYCH 5625. ACE: Child and Adolescent Psychiatry Consult-Liaison. This advanced clerkship is an introduction to clinical practice as a consultation liaison psychiatrist working with children and adolescents. Under supervision, the student will examine patients with psychiatric diseases complicating pediatric management including delirium, catatonia, anxiety and mood disorders both complicating pediatric illness and mimicking pediatric illnesses (somatoform disorders), management of chronic pain in collaboration with the pediatric pain team, acute stress and posttraumatic stress disorder on the trauma service and in the intensive care unit, and psychiatric consultation regarding eating disorders. Readings will focus on the neurobiology of trauma and the neurobiology of the interface between emotions and physical disorders. The student may participate in research studies if available at that time.

PSYCH 5629. ACE: Inpatient Child and Adolescent Psychiatry. Students will provide inpatient psychiatric care for children and adolescents aged 4 to 18. Students can expect to see a varied range of ages, diagnoses, and presenting complaints including depression, anxiety, psychotic disorders and autism. Students will join a multidisciplinary team working with nursing, social work, and mental health specialists to treat acute mental illness. The primary goals of treatment include comprehensive diagnosis, pharmacologic management, development of treatment plans, and implementation of behavior management protocols. Family meetings occur twice weekly to support safe transition to outpatient care

PSYCH 5635. ACE: Emergency Psychiatry. In the Psychiatric Treatment Unit the student will see a broad range of acute psychiatric and neuropsychiatric disorders. Commonly encountered conditions include delirium, dementia, depression, suicide attempts, capacity evaluations, agitation management, altered mental status, conversion disorder, addictions, and somatoform disorders. This is similar to the population on the Consultation-Liaison service, but with greater acuity and a focus on disposition. The student will work closely with the primary resident providing coverage with supervision to the team by the attending. Students will also see psychiatric consults in the VUMC Emergency Department and OBGYN triage. Patients will be above the age of 18.

PSYCH 5638. ACE: Outpatient Psychiatric Clinics. Students will become primarily active contributors to evaluation and treatment clinics in adult outpatient psychiatry under the direct supervision of Dr. Bill Petrie. Students will have the opportunity to work closely with Dr. Petrie in both inpatient and outpatient settings, treating a wide variety of psychiatric illness. Sessions sitting in on psychotherapy with Dr. Linda Manning at VCIH are also available. Students will work individually and in treatment teams, observing and learning the basics of outpatient psychiatric evaluation, psycho-pharmacology and psychotherapy (particularly psycho-dynamic formulation and the principles of insight-oriented therapy and CBT). The course will also include didactic teaching, case presentations, treatment planning, chart review and group supervision.

PSYCH 5639. Al: Inpatient Child and Adolescent Psychiatry. Students will provide inpatient psychiatric care for children and adolescents aged 4 to 18 in a multidisciplinary setting. This course offers the opportunity to take full ownership for patient care in direct collaboration with the attending physician. Students will carry a case-load of patients intended to prepare them for their future role as residents. Duties will include completion of daily documentation including admission/discharge/daily notes, order entry, and patient cross-cover. Students can expect to see a varied range of ages, diagnoses, and presenting complaints. Feedback will be provided to ensure readiness for residency.

PSYCH 5641. ACE: Inpatient Treatment of Psychosis. Psychosis (i.e., delusions, hallucinations, disorganized thought and behavior) is a cardinal feature of several psychiatric disorders. This advanced clinical experience

gives the student hands-on exposure to inpatient treatment of patients with psychotic disorders. Students will work closely with resident and attending physicians to develop differential diagnosis and treatment plans. Treatment in this inpatient setting centers on stabilization of acute and severe illness. Students will be responsible for following several patients. Assigned readings supplement patient care experiences.

PSYCH 5645. ACE: Adult Psychiatry Consult-Liaison. The Adult Psychiatry Consultation Service at VUMC provides psychiatric services for a broad range of patients with psychiatric and neuropsychiatric disorders in the context of medical, surgical, and obstetric (and other) inpatient settings at Vanderbilt University Hospital and Stallworth Rehabilitation Hospital. Our service is one of the busiest in the country and offers an opportunity to see the intersection of psychiatric conditions with medical illness. Commonly treated conditions include delirium, dementia, depression, anxiety, suicide attempts, substance withdrawal, conversion disorder, somatic symptom disorder, and factitious disorder. Regardless of the diagnosis, we also help with agitation management and capacity evaluation. The sub-intern will become an integral part of the team, with assigned primary focus on the care of a discrete set of patients, and will be directly supervised by Psychosomatic Medicine fellows and Psychiatry attendings. A practical focus on areas of special interest to the student may be arranged.

PSYCH 5655. Al: Addiction Psychiatry. Alcohol and other substance use disorders are extremely common in primary care and across a broad range of medical specialties. These conditions lead to direct medical and psychiatric co-morbidity, predispose to a host of associated conditions (e.g., cancer, cirrhosis, physical and emotional trauma, infections, and mood disorders), and complicate management of medical and surgical conditions. The mission of this Al in substance use disorders is to help provide future physicians with the fundamental clinical skills necessary to properly diagnose, treat, and refer patients with substance abuse disorders.

PSYCH 6100. Special Clinical Study—Vanderbilt. A variety of opportunities are available for clerkships and electives in the Department of Psychiatry that can be combined, especially where daily continuous patient care is not essential to work flow. In addition to the standard rotation sites, other experiences can be arranged. Two or three experiences can be combined within a single elective month. These may include a mixture of areas within and outside the listed standard electives, such as forensics, geriatric psychiatry, and brain imaging research. Opportunities will be arranged to meet the interests of the individual student, potentially blending topics to provide exposure to two to three of these areas. Faculty approval is recommended at least two months prior to the start of the month's rotation in order to develop a plan optimal to meeting the student's interests. Approval required.

PSYCH 7100. AWAY ACE: Psychiatry. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

PSYCH 7150. Special Research Study—Non-VU. Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

Radiology

RAD 5310. Introduction to Interventional Radiology. Students will join a team of attending, fellow and resident physicians on the Interventional Radiology service at Vanderbilt Monroe Carrel Children's Hospital (VCH). Interventional Radiology involves working as a consultant to the physicians who are caring for patients admitted to the hospital as well as performing a multitude of outpatient procedures. Reasons for consultation requests vary, but some of the more common ones include arteriography, CT-guided biopsy of lesions, implantation of infusion devices, and external drainage of infectious processes. With each new consultation request, students will have the opportunity to research the patient using StarPanel and then present the case to the team during morning rounds. The student will then be able to perform a history and physical on patients as they get prepared for their procedure. The student will then participate in the procedure and provide follow-up care as needed with the supervision of the resident and attending physicians. At the conclusion of the two-week

elective rotation, students will be able to understand the role Interventional Radiology plays in the care of both inpatients and outpatients. They will have a basic understanding of the breadth of procedures offered, and the indications, complications, and post procedural care for the most common procedures. Additionally, the students will have familiarity with evidenced-based approaches to care.

RAD 5315. Intro to Diagnostic Radiology. The course will provide students with a broad exposure to the various sub-specialties of radiology and will provide focused training on basic chest x-ray interpretation. The students will spend each day in a different sub-specialty reading room within the department. The students will sit with the faculty, fellows, and residents on the service and observe them interpreting the various studies that are read or performing the various procedures that are done. For each reading room, there will be a series of 5 or so "check-offs" which consists of bits of information that student must learn in that reading room (for example, "What is the appropriate follow-up of an incidentally-discovered pulmonary nodule?"). At the conclusion of the elective, students will know the various imaging modalities and the role they play in the diagnosis of disease and management of patients; the numerous procedures performed by radiologists and their role in patient care; and how radiologists participate as active members of multidisciplinary health care teams in caring for patients. Students will develop skills and confidence in the interpretation of plain chest x-rays, particularly for common and major abnormalities.

RAD 5320. Musculoskeletal & Emergency Radiology. Students will spend two weeks in the musculoskeletal/ emergency radiology reading room. It's a bustling place where MSK-subspecialty trained radiology faculty, MSK fellows, and radiology residents interpret musculoskeletal studies and selected studies performed in the Emergency Department, as well as provide consultation services to a variety of physicians (emergency, trauma team, general surgery, orthopaedic surgery, infectious diseases, internal medicine, rheumatology, etc.). Students will be exposed to a broad spectrum of musculoskeletal pathology including trauma, athletic injuries, arthritis, infection, neoplastic conditions, expected post-operative changes, and post-operative complications. Imaging modalities will include conventional radiographs, Magnetic Resonance Imaging, Computed Tomography and, possibly, ultrasonography. Students will have the opportunity to observe interventional procedures such as fluoroscopically-guided arthrography and CT/US-guided biopsies. In addition to daily teaching at the PACS monitors using live cases, there will be didactic lectures/ case presentations written specifically for this course focusing on trauma, sports injuries, arthritis, and the basics of musculoskeletal neoplasms. The advantages and limitations of the various modalities utilized will be emphasized. The didactic component of the elective will be further enhanced by daily noon radiology conferences. The course will be of particular interest to students contemplating careers in radiology, orthopaedic surgery, sports medicine, and emergency medicine; however, any student interested in learning more about the musculoskeletal system or radiology is encouraged to attend. At the conclusion of the two-week elective rotation, students will be able to accurately describe fractures, have an organized approach to diagnosing arthritis, recognize significant athletic injuries on MRI, have a basic understanding of the concept of aggressiveness of musculoskeletal neoplasms, and have an understanding of the strengths and limitations of the modalities used by radiologists in diagnosing a variety of conditions.

RAD 5610. ACE: Diagnostic Radiology. Students will rotate through all diagnostic subspecialties in radiology, getting a broad exposure to various pathologies and imaging modalities. Each student will have plenty of latitude to tailor the course to his/her academic interests and career goals. For example, a student going into orthopedic surgery would be free to spent most of the rotation in the musculoskeletal division, while a student going into OB/GYN would be free to spend most of the rotation on ultrasound. Some exposure to all subspecialties is required, however. The purpose of this course is to acquaint medical students with the fundamentals of diagnostic imaging and to highlight optimal imaging pathways for various clinical conditions. The course is designed to be relevant and suitable for all medical students, regardless of their ultimate career choice or interests; this course is not designed solely for students interested in pursuing a career in radiology. Besides getting daily instruction in the reading rooms by faculty, fellows, and residents, students will be engaged in

a number of other educational activities. Students will watch Radiology faculty lecture podcasts on various topics, take online quizzes, attend live lectures presented by radiology residents, attend daily Radiology noon conferences, solve weekly unknown case challenges, and participate in at least one PBL (Practice Based Learning) exercise during the course. The course has a pre-test and a final exam.

RAD 5630. ACE: Pediatric Radiology. This course will introduce the medical student to the principles of diagnostic imaging in a children's hospital setting. The medical student experience consists of interactive reading room sessions covering all diagnostic imaging modalities, such as radiography, fluoroscopy, computed tomography (CT), MRI, nuclear medicine, and subspecialities in pediatric radiology such as neuroradiology and interventional radiology. The students have the opportunity to attend radiology teaching conferences and many interdisciplinary conferences which highlight imaging. In addition, we offer a host of self-directed activities outside the reading room, such as recommended reading assignments, learning modules, and teaching files. The successful student will learn the radiologist role in the care of the patient and how to interact with radiologists, as well as the appropriate work up of common pediatric conditions. The importance of the clinical question in the role of choosing the best and most appropriate diagnostic imaging studies is emphasized.

RAD 5640. ACE: Neuroradiology. The month will allow a broad exposure to the field of neuroradiology with a strong focus on review of clinically relevant neuroanatomy. The primary role of the student will be as an observer, working alongside residents, fellows and faculty as imaging studies are interpreted and procedures are performed. Students will be responsible for delivering a single informal presentation during the month. Prerequisite—ISC: Medical Imaging and Anatomy or ACE: Diagnostic Radiology

RAD 5650. ACE: Adult Interventional Radiology. Interventional Radiology is an exciting, fast paced, advanced specialty performing minimally invasive procedures on virtually every organ in the body. This course provides an immediate immersion into the daily life of an IR. You will be involved in every aspect of treating patients, including outpatient clinic visits, researching and working up the patient the day of the procedure, presenting the patient in morning rounds, consenting and performing physical exams, scrubbing in on the procedure, admitting and post procedural care, inpatient rounds, and long term follow-up. You will also have the option to visit other specialty areas of IR, including Pediatric IR, the One Hundred Oaks Vein Center, and read CTA/MRA with our noninvasive vascular specialists. You will be required to research and present one case report while on the service. The typical day lasts from 7 am to 6 pm and there are no call responsibilities. Typical procedures include angioplasty and stent placement in the arteries and veins, embolization of bleeding, embolization of tumors, uterine fibroid embolization, bronchial artery embolization, gonadal vein embolization, chemo-embolization, percutaneous treatment of tumors (ablation), placement of nephrostomy, biliary, gastrostomy, venous catheters, and TIPS.

RAD 5710. ACE: Visiting Diagnostic Radiology. The Visiting Diagnostic Radiology Elective in diagnostic radiology is designed for medical students interested in pursuing a career in radiology. The goals of the course are to acquaint medical students with the fundamentals of diagnostic imaging and to highlight optimal imaging pathways for various clinical conditions. Students will rotate through several diagnostic subspecialties in radiology and get a broad exposure to various pathologies and imaging modalities. Daily instruction will be provided by faculty, fellows, and residents.

RAD 6100. Special Clinical Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical work at Vanderbilt. Approval required.

RAD 7100. AWAY ACE: Radiology. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

RAD 7150. Special Research Study—Non-VU. Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

Radiation Oncology

RADO 5315. Introduction to Radiation Oncology. This elective is designed to introduce students to the field of radiation oncology. This will require approximately 40 hours per week. No nights or weekends. Students will be paired with attending/resident pairs which will be assigned on a daily basis by the chief resident. With each new patient, the student will be expected to go in to see the patient first and obtain a basic history and physical. This will be presented to the resident who will then review these findings directly with the attending. The team (resident/attending/student) will then discuss treatment options with the patient and formulate a treatment plan. At the conclusion of this course students will be able to take a focused oncologic history, perform a pertinent exam, and understand the basics of diagnosis, staging, and treatment options for cancer patients. They will learn about the multidisciplinary nature of oncologic care.

RADO 5620. ACE: Radiation Oncology. This 4 week clinical rotation in radiation oncology is designed for students who are interested in pursuing a career in radiation oncology. Students are integrated into the clinical workflow. They are assigned to work one on one with individual attendings covering all aspects of radiation oncology including malignancies of the head and neck, lung, breast, gastrointestinal, gynecological, prostate and brain. Students work with radiation oncology residents in the initial evaluation of patients, formulation of treatment, supervision of treatment, and follow-up evaluations. Students will learn indications and techniques for radiation therapy. With each new patient, the student will be expected to go in to see the patient first and obtain a basic history and physical. This will be presented to the resident who will then review these findings directly with the attending. The clinical team (resident/attending/student) will then discuss treatment options with the patient and formulate a treatment plan. At the conclusion of this course students will be able to take a focused oncologic history, perform a pertinent exam, and understand the basics of diagnosis, staging, and treatment options for cancer patients. They will learn about the multidisciplinary nature of oncologic care. At the end of the rotation students are required to give an oral presentation at the departmental teaching seminar.

RADO 6100. Special Clinical Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical work at Vanderbilt. Approval required.

RADO 7100. AWAY ACE: Radiation Oncology. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required

RADO 7150. Special Research Study—Non-VU. Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

Surgery

CHAIR OF THE SECTION R. Daniel Beauchamp

General Surgery

General Surgery, VAH Colon and Rectal Surgery Emergency General Surgery Gastrointestinal and Laparoscopic Surgery Hepatobiliary/Liver and Renal Transplant Surgical Oncology Trauma

Surgical Specialties

Cardiac Surgery Neurological Surgery Oral and Maxillofacial Surgery Pediatric Surgery Plastic Surgery Thoracic Surgery Urologic Surgery SURG 5020. Surgery Core Clerkship. This is the second year clinical core rotation. For ten weeks each student in the second-year class is assigned to the surgical divisions of Vanderbilt University Hospital or Nashville Veterans Administration Medical Center. Under the direction and supervision of the staff, the student takes histories, does physical examinations and assists the staff in the diagnostic evaluation and clinical management of assigned patients. Half of each student's period of clinical work is in general surgery. The other five weeks of the clinical assignment provide two (2) rotations to the specialty services in Anesthesiology (VAH), Cardiothoracic (VUH,VAH), Interventional Radiology (VUH), Neurosurgery (VUH), Ophthalmology (VUH), Orthopaedic Surgery (VUH), Otolaryngology (VUH), Pediatric Surgery (VUH), Plastic Surgery (VUH), Renal Transplant (VUH), Urology (VUH), Vascular Surgery (VUH), and Trauma (VUH). These rotations provide exposure to a variety of patients with problems in general surgery and in the specialty fields of surgery. Members of the staff hold teaching sessions daily. Students go with their patients to the operating rooms where they are observers and assistants. An integral part of this clerkship is the core lecture series in surgery. Students will be assigned faculty preceptors for small group discussions. Second year.

SURG 5315. Introduction to Plastic Surgery. In this two-week elective, students will be exposed to the broad spectrum of plastic surgery including pediatric plastic surgery (cleft lip and palate, major craniofacial surgery, and other congenital and acquired anomalies), hand surgery, microvascular surgery, burn surgery, reconstructive surgery of the extremities, and breast, head, and neck reconstruction. They will also have the opportunity to be exposed to cosmetic plastic surgery including facial rejuvenation, breast enhancement and reduction, and other body contouring procedures. At the end of the rotation, students will have a much greater knowledge and appreciation of the role that plastic surgery plays in patient care.

SURG 5320. Cardiac Surgery Mechanical Support. This will be a twoweek elective in the CVICU focusing on advanced mechanical support in cardiac surgery. The students will be given patients who are undergoing mechanical support which may include a left ventricular assist device, Impella, ECMO, etc. Students will round with the team and present these patients. After rounds they will receive hands-on simulator training and review echocardiography images on cardiac surgery patients. Lectures will discuss the types of mechanical devices and hemodynamic assessment with pulmonary artery catheters and echocardiography. If for some reason there are no mechanical devices, students will care for the most complex patients in the ICU. At the conclusion of the elective, students will understand the different types of mechanical support, know advanced cardiac physiology, understand basic transesophageal and transthoracic echocardiography, have experience using echocardiography on a simulator, and will be able to present on extremely complex cardiac surgery patients.

SURG 5325. Fundamentals of Spine Surgery. Students participating in this elective will have an in-depth exposure to the diagnosis and surgical management of spine disorders. Students will spend several days each week in the neurosurgical operating room, observing and participating in cases ranging from the treatment of degenerative disorders to spinal tumors and spine trauma. Emphasis will be placed on learning key anatomic and surgical concepts that optimize patient outcomes. Students will also spend time with neurosurgery faculty in the outpatient clinic setting and develop practical experience with physical examination, clinical diagnostics, and treatment decision making. Student will participate in inpatient rounds, consults, and conferences such as the multidisciplinary spine conference and journal club. Much of the students' learning will occur in a case-based manner through exposure to individual patients, but didactic instruction will include several key readings and interactive discussion. At the conclusion of the two-week elective, students will understand the basic paradigms used in the treatment of common spine disorders and the principles of basic neurologic exam of the spine patient. They will be familiar with the assessment of common neuroimaging and with key anatomic, physiologic, biomechanical, and oncological principles used to treat these disorders as well as nonoperative strategies employed in both outpatient and emergency settings.

SURG 5330. Brain Tumors: A Surgical Perspective. This elective will offer an introductory exposure to the multidisciplinary approach used to treat patients with brain tumors. Students will spend several days each week in the neurosurgical operating room, observing and participating in cases including open and endoscopic resections of gliomas, metastases, meningiomas, and skull base tumors. They will have the opportunity to review the pathology specimens with the neuro-pathologists and attend the neurosurgical brain tumor clinic as well as the neuro-oncology and radiation oncology clinics. Students will participate in teaching rounds on the neurosurgery brain tumor service, sit in on discussions between faculty and patients, and attend conferences such as brain tumor board and journal club. In addition to case-based learning, students will read several key readings and discuss these with faculty. At the conclusion of the two-week elective, students will understand the basic paradigms used in the treatment of common brain tumors. They will be familiar with surgical techniques used to treat brain tumors, and they will gain insight into the multidisciplinary aspect of oncology and techniques for communicating difficult news to patients.

SURG 5335. Pediatric Neurosurgery. Students participating in this elective will have an introductory exposure to the surgical treatment of neurologic disorders in children from infancy through adolescence. Each day will begin with attendance at morning report, where overnight consults and upcoming cases are discussed. Students will spend several days each week in the neurosurgical operating room, observing and participating in cases including resection of brain tumors, epilepsy surgery, and treatment of hydrocephalus, spine disorders, and trauma. Students will also spend time seeing patients in the clinic; participating in inpatient rounds and consults; sitting in on discussions between faculty, patients, and families; and attending conferences such as pediatric brain tumor board and journal club. In addition to case-based learning, students will read several key readings and discuss these with faculty. At the conclusion of the two-week elective, students will understand the basic paradigms used in the treatment of common neurologic disorders in children. They will be familiar with surgical techniques used to treat these disorders, and they will become familiar with non-operative strategies employed in both the outpatient and critical care settings and techniques for communicating difficult news to patients.

SURG 5612. Al: Surgery, VAH. Students in the Acting Internship in surgery at the Veterans Affairs Hospital will spend time on a general surgery service. Students will function in a supervised environment and be expected to fulfill the role of a surgical intern, including caring for their own patients, writing orders, and having a role in the conduct of operations. Students will be exposed to the full range of clinical activities of each of these services, and they will also have the opportunity to participate in preoperative evaluation, intraoperative management, and postoperative care. The student will actively participate in a weekly clinic. Each service has a full complement of conference activities, which the student will attend. There will be close observation of the student's activities by the house staff and the attendings. Weekly feedback will be provided for reflection. Students will have in-house overnight call at least four times during the four-week rotation and participate on morning ward rounds Saturday and Sunday twice during the four weeks. Workups, progress notes, and clinic notes will be read and feedback provided for the student's reflection and improvement. The strengths of this ACE on VA Surgery include the residents and attendings, the active role of the student, the breadth of clinical exposure, and the personal coaching provided. VA system access is required. Students cannot take this course if they have not received VA access at least 2 weeks before the course starts.

SURG 5613. ACE: Surgery, VAH. Students rotating on surgery at the Veterans Affairs Hospital will spend time on the general surgery service. Students will be exposed to the full range of clinical activities of each of these services, and they will also have the opportunity to participate in preoperative evaluation, intraoperative management, and postoperative care. The student will actively participate in a weekly clinic. Each service has a full complement of conference activities, which the student will attend. There will be close observation of the student's activities by the house staff and the attendings. Weekly feedback will be provided for reflection. Students will have in-house overnight call at least four times during the four-week rotation and participate on morning ward rounds Saturday and Sunday twice during the four weeks. Workups, progress notes, and clinic notes will be read and feedback provided for the student's reflection and improvement. The strengths of this ACE on VA Surgery include the residents and attendings, the active role of the student, the breadth of clinical exposure, and the personal coaching provided. VA system access is

required. Students cannot take this course if they have not received VA access at least 2 weeks before the course starts.

SURG 5614. ACE: Surgery Critical Care. The Surgical Critical Care Advanced Clinical Elective provides students with a multidisciplinary approach to care of the critically ill surgical patient. The units are very active critical care facilities with state-of-the-art monitoring and support technology. The course content emphasizes a physiologic approach to the care of critically ill general, vascular, transplant, geriatric, oncology, and emergency surgical patients. Students will gain experience with invasive hemodynamic monitoring, mechanical ventilation, enteral/parenteral nutrition, surgical infectious disease, and management of vasoactive medications. Topics such as cost containment, resource utilization, and medical ethics are an integral part of daily intensive care management. The patient care service consists of a surgical or anesthesia attending physician, a surgical critical care fellow, midlevel surgical/anesthesia residents, and surgical interns. Other staff available in the unit includes clinical pharmacists, respiratory therapists, and nurse practitioners. Teaching rounds are made each morning with didactic lectures and case-discussions Monday-Thursday. Friday morning attendance of surgical grand rounds and resident teaching conference is mandatory. A course syllabus containing management protocols and educational objectives is provided to all registrants. Evaluation of the student's performance is based on clinical knowledge, basic science application, integration into the team, and progression in learning throughout rotation. Mid-rotation and final evaluations of each student will be conducted by the critical care attendings, critical care fellow assigned to the unit, and the course director. This course fulfills the acute care requirement.

SURG 5615. ACE: Vascular Surgery. The field of Vascular Surgery has been markedly transformed over the last two decades, fueled by an explosion of technological advancement, research-supported clinical science development, and cross-disciplinary collaboration. Students enrolled in this ACE will experience a hands-on introduction to this rapidly evolving field by immersing themselves into the Vascular Surgery team at Vanderbilt Hospital. The engaged student can look forward to the prospect of caring for patients in the inpatient and outpatient settings, where he or she will learn about the various surgical manifestations and functional burdens imposed by atherosclerotic disease, aneurysmal disease, diabetes mellitus, and inherited disorders of the vascular and hematologic systems. As part of the care team, students may be asked to field consult requests from our affiliated services, and will have the opportunity to join the surgical staff in the operating theater to experience both open and endovascular surgery. By the end of this course, it is our sincere hope that the students develop an interest in pursuing a career in vascular surgery, or at least have a sound knowledge base that will help in the care of all aspects of adult medicine.

SURG 5617. ACE: Colon and Rectal Surgery. The Colorectal Surgery ACE focuses on the care of patients suffering from diseases and disorders of the colon, rectum and anus. This includes such diseases as colorectal cancer, anal cancer, inflammatory bowel disease, diverticulitis, colon polyps, and benign anorectal conditions. The goal of the rotation is to broaden the student's understanding about the pathophysiology, clinical presentation, work-up and treatment of common colorectal diseases. The students will be exposed to all aspects of the care of the patient including evaluation in the clinic, pre-op teaching, operative management, post op care and discharge. Students will see a variety of surgical techniques including laparoscopic, open, and robotic cases as well as advanced endoscopic procedures and anorectal cases. Students will function as part of the colorectal team and will be assigned patients that they will follow throughout the duration of their hospital stay. They will be expected to participate on rounds as well as attend/present at the weekly colorectal surgery conference.

SURG 5618. ACE: Hepatobiliary. The hepatobiliary and liver transplant surgery rotation includes the full spectrum of benign and malignant disease of the liver, pancreas and bile ducts. This service allows exposure for rotating students to complex hepatobiliary anatomy and pathophysiology, including liver failure. Unique to this rotation is the opportunity to participate in organ procurements, a very popular operation amongst surgical students. Abdominal organ procurement offers unparalleled anatomic exposure to the abdomen and pelvis. Rotating students will participate

directly in these operations and they have the right of first refusal on each procurement. As there is ample opportunity to see these operations, a waiting list is compiled for other students to travel for these operations, which are often off site. Students will have the opportunity to function as an integral member within the surgical resident clinical teams, as well as attend weekly clinics and teaching conferences, including Hepatobiliary Conference, Liver Transplant Selection Committee and Liver Team Walk Rounds. The course will focus on enhancing student clinical practicebased learning skills. Students will have the opportunity to (1) deepen their understanding of the complex anatomy and pathophysiology of the liver, (2) learn the basic principles of multidisciplinary management of liver failure, (3) review the differential diagnoses and therapeutic strategies for the liver mass and (4) understand the numerous complications seen after hepatobiliary and liver transplant procedures. Additionally, students will not be expected to stay for overnight call on a rotating schedule. However, given the emergency nature of procurements and transplants, after hour effort is common, as dictated by the on-call attending and resident staff.

SURG 5619. Al: **GI/Lap Surgery.** The AI rotation of the GI/Lap service will expose the student to a broad variety of general surgical and advanced laparoscopic procedures. The student will be integrated into the four resident teams and will be expected to fully participate in activities-patient rounds, duties in the operating room, and all educational conferences. If desired, the student can choose to focus their clinic or OR time on a subset of the practice such as bariatric surgery, laparoscopic foregut surgery, or advanced endoscopic procedures and the faculty who perform them.

SURG 5620. ACE: Neurological Surgery. Neurosurgery is a fast-paced, challenging field dedicated to the comprehensive treatment of critically ill patients with neurologic diseases. It is an incredibly diverse specialty, incorporating treatment of children and adults suffering from CNS tumors, cerebrovascular disease, movement disorders, spine disorders, peripheral nerve diseases, and trauma. Each student will spend their 4 weeks rotating through the 4 different neurosurgical services to gain a broad exposure to the field. Students will take part in the care of inpatients, the workup of consults, and the technical aspects of a variety of bedside and operative procedures. They will also attend several outpatient clinics and take overnight call with the junior resident on a Q4 schedule. Students will participate in career development sessions designed to prepare them for the residency application process and will give several short presentations to the clinical teams and the department throughout the rotation.

SURG 5621. ACE: Post-Surgical Critical Care. This ACE will expose medical students to care of a broad range of postoperative surgical critical care patients, including cardiothoracic, neurosurgical, otolaryngical, orthopedic, vascular, and general surgical patients. This course fulfills the acute care requirement. VA system access is required. Students cannot take this course if they have not received VA access at least 2 weeks before the course starts.

SURG 5623. ACE: General Surgery, STH. General and Vascular Surgery require broad diagnostic and patient care skills, in additional to technical expertise. The student pursuing any surgical specialty should have advanced experience in managing the wide spectrum of surgical pathology and comorbid conditions seen on a tertiary surgical service. This course offers additional exposure to pathology in disease processes ranging from to sepsis, respiratory failure, renal failure, wound issues, as well as end of life and palliative care. Students will have the opportunity to work with multiple attending preceptors and be a part of surgical resident teams, as well as participate in general surgery and multidisciplinary vascular and surgical oncology conferences. The course will focus on enhancing student clinical practice-based learning skills. Students will have the opportunity scrub on a wide variety of operations and take overnight call with experienced surgical residents, exposing them to the intricacies of patient care on a one on one basis. Students will be expected to stay for overnight call at least four times during the four-week rotation.

SURG 5628. Al: Hepatobiliary. The hepatobiliary and liver transplant surgery rotation includes the full spectrum of benign and malignant disease of the liver, pancreas and bile ducts. This service allows exposure for rotating students to complex hepatobiliary anatomy and pathophysiology, including liver failure. Unique to this rotation is the opportunity to participate in organ procurements, a very popular operation amongst surgical

students. Abdominal organ procurement offers unparalleled anatomic exposure to the abdomen and pelvis. Rotating students will participate directly in these operations and they have the right of first refusal on each procurement. As there is ample opportunity to see these operations, a waiting list is compiled for other students to travel for these operations, which are often off site. Students will have the opportunity to function as an integral member within the surgical resident clinical teams, as well as attend weekly clinics and teaching conferences, including Hepatobiliary Conference, Liver Transplant Selection Committee and Liver Team Walk Rounds. The course will focus on enhancing student clinical practicebased learning skills. Students will have the opportunity to (1) deepen their understanding of the complex anatomy and pathophysiology of the liver, (2) learn the basic principles of multidisciplinary management of liver failure, (3) review the differential diagnoses and therapeutic strategies for the liver mass and (4) understand the numerous complications seen after hepatobiliary and liver transplant procedures. Additionally, students will not be expected to stay for overnight call on a rotating schedule. However, given the emergency nature of procurements and transplants, after hour effort is common, as dictated by the on-call attending and resident staff. Als additionally participate in the service much as PGY1 interns do with the exception that they are closely supervised for order writing and procedures. They are also given priority for elective cases and procurements over students in the ACE. However, since interns on this rotation do not often go to the OR for elective cases and this course as an acting internship is designed to empower the student to act as an intern on the service, operative experience is a secondary objective.

SURG 5630. ACE: Cardiac Surgery. The cardiac surgical service deals with congenital and acquired heart disease, pulmonary vascular disease, and anomalies of the arterial and venous systems in the chest in both pediatric and adult patients. Students will have the opportunity to evaluate patients in the clinic with complex vascular, valvular, and cardiac lesions and understand their anatomy and physiology. They will be introduced to cardiac ECHO, cardiac MRI, CT scans of the chest, and cardiac catheterization by the attending surgeon. They will follow the patient to the operating room where they will participate in the surgical repair and to the CVICU and step-down unit for postoperative care. In the CVICU the student will be introduced to the evaluation of hemodynamic parameters; use of vasopressors, dilators and antiarrhythmics; postoperative pacing, ECHO and ventilator management. During the four-week course the student may get the opportunity to participate in an aortic dissection repair, ventricular assist device insertion, cardiac transplant, or organ retrieval.

SURG 5632. ACE: Thoracic Surgery. The Vanderbilt Thoracic Surgery Advanced Clinical Experience will introduce the student to general thoracic surgery including preoperative workup, basic thoracic surgery operative skills, and postoperative care. This rotation will teach basic thoracic surgical and endoscopic techniques. The student will learn how to recognize and care for thoracic surgery patients, including placement of chest tubes, drainage of effusion, endoscopy, and participate in various thoracic surgery operations.

SURG 5660. ACE: Pediatric Surgery. The Pediatric Surgery Advanced Clinical Experience will allow students to hone their clinical skills in accurate history taking, clinical assessment of children, developing an appropriate differential diagnosis and potential plan. Students will participate in the operative management of these same patients and follow their postoperative progress until discharge. Students will have the opportunity to (1) improve their knowledge of the common pathologies encountered in a pediatric surgical practice, (2) broaden their understanding of the surgical management of these problems, and (3) gain first-hand experience with the depth and breadth of a clinically busy pediatric surgical service. During the rotation students will spend time with the team in clinic at least once per week, in the operating rooms, on the wards with the interns and physician extenders and seeing new consults with the team. Additionally, ACE students will be expected to stay for overnight call at least 3 times during a 4-week rotation with at least 1 day over a weekend.

SURG 5665. Al: Pediatric Surgery. The Pediatric Surgery Acting Internship will focus on honing the students clinical skills in accurate history taking, clinical assessment of both acute and chronically ill neonates and children, developing an appropriate operative (or non-operative) plan, participation in the operative management of these patients and following their post-operative progress until discharge. The AI student will have the opportunity to (1) improve their knowledge of the common and uncommon pathologies encountered in a pediatric surgical practice, (2) broaden their understanding of the operative and non-operative management of these problems, (3) gain first-hand experience with the depth and breadth of a clinically busy pediatric surgical service and (4) mentor younger students. During the rotation students will spend time with the team in clinic, in the operating rooms, on the wards and seeing new consults on their own. Additionally, AI students will be expected to stay for overnight call at least 4 times during a 4-week rotation with at least 2 over a weekend.

SURG 5670. ACE: Surgical Oncology and Endocrinology. The Advanced Clinical Experience (ACE) in Surgical Oncology and Endocrinology offers students a broad and detailed clinical experience in the treatment of malignancies. Emphasis will be on the multidisciplinary management of a variety of malignancies including those of the liver and biliary tract, pancreas, gastrointestinal tract, retroperitoneum, breast, skin and soft tissue and endocrine systems. Students will be active participants both in the inpatient (including the operating room and floor) and outpatient settings and participate in several educational conferences including multidisciplinary tumor board, surgical oncology conferences and others and Vanderbilt University Hospital. Students will be expected to take overnight call four times during the four-week rotation.

SURG 5675. Al: Surgical Oncology and Endocrinology. The Acting Internship (AI) in Surgical Oncology and Endocrinology provides students with a broad but detailed clinical experience in the diagnosis and treatment of solid organ malignancies. Emphasis will be on the multidisciplinary management of a variety of malignancies including those of the liver and biliary tract, pancreas, gastrointestinal tract, retroperitoneum, breast, skin and soft tissue and endocrine systems. Students will be active participants both in the inpatient (including the operating room and floor) and outpatient settings and participate in several educational conferences including multidisciplinary tumor board, surgical oncology conferences and others and Vanderbilt University Hospital. Students will be expected to take overnight call four times during the four-week rotation. Highlights of the AI experience in Surgical Oncology will include increased responsibility with the goal of preparing the student for surgical internship, including being primarily responsible for their own patients, answering pages, writing orders under the supervision of residents, working up and presenting patients both in the inpatient and outpatient setting, and taking call which will include cross-covering of other services.

SURG 5680. ACE: **Plastic Surgery.** Plastic surgery is a broad field with subspecialties that include craniofacial, microsurgery, hand, breast reconstruction, burn, and aesthetics. Plastic surgeons treat patients of all ages and work on almost every part of the body from head to toe. During this advance clinical experience, you will have the opportunity to learn about the diagnosis and management of a wide variety of reconstructive and aesthetic problems. Learning opportunities with faculty and residents are abundant and you will get plenty of experience in both the operating room and the clinics.

SURG 5685. AI: Plastic Surgery. This acting internship is intended to provide an immersive experience into caring for pre-operative and post-operative plastic surgery patients. Students will work closely with the plastic surgery faculty, fellows and nursing teams to care for the patients on each of our services. This acting internship will provide students with the tools to serve as an intern on any surgical service by building skills in surgical floor care, pre-operative evaluation, and medical management of surgical patients.

SURG 5840. ACE: Trauma. The trauma ACE allows students to follow injured patients from the moment they arrive until discharge. This includes management in all settings, ICU, floor, clinic and the option of time in the comprehensive traumatic brain injury clinic. Students will be introduced to high-level procedure-based situations including central venous access, tube thoracostomies, bronchoscopy, advanced suturing techniques and operative management of the trauma patient. Expectations will focus on the complex management of patients including coordination of care with other subspecialties, identifying and managing critical care issues such as ventilator management, massive resuscitation efforts, complexities of organ failure and sepsis, end-of-life decisions and organ donation. Opportunities for both day and night coverage will allow the student to obtain a

complete understanding of the field of trauma (the #1 cause of death for all patients age 1-45). This course fulfills the acute care requirement.

SURG 5850. AI: Trauma. The trauma AI allows students to follow injured patients from the moment they arrive until discharge. This includes management in all settings, ICU, floor, clinic and the option of time in the comprehensive traumatic brain injury clinic. Students will be introduced to high-level procedure-based situations including central venous access, tube thoracostomies, bronchoscopy, advanced suturing techniques and operative management of the trauma patient. Expectations will focus on the complex management of patients including coordination of care with other subspecialties, identifying and managing critical care issues such as ventilator management, massive resuscitation efforts, complexities of organ failure and sepsis, end-of-life decisions and organ donation. Opportunities for both day and night coverage will allow the student to obtain a complete understanding of the field of trauma (the #1 cause of death for all patients age 1-45). This course fulfills the acute care requirement.

SURG 5930. AE: Preparation for Surgical Internship. The goal of this course is to arm fourth year medical students entering a surgical specialty with the skills and understanding needed to hit the wards as a resident. The curriculum for the course has been developed by the American College of Surgeons in conjunction with the Association for Surgical Education and Association of Program Directors in Surgery. These activities and sessions include mock pages, bedside procedures, operative anatomy using cadaveric dissections, basic open and laparoscopic skills, airway management and simulation scenarios, and will be led by some of Vanderbilt's best clinical teachers. At the end of the course, students should feel prepared to enter a surgical internship and understand their own strengths and weaknesses as they prepare for surgical training.

SURG 6100. Special Clinical Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

SURG 7100. AWAY ACE: Surgery. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

SURG 7150. Special Research Study—Non-VU. Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

Urologic Surgery

UROL 5310. Reconstructive Urology. Students will join a team of attendings, fellows, and residents on the Reconstructive Urology service at Vanderbilt Hospital and Cool Springs Surgery Center. Students will participate in the operating room, clinics, outpatient procedures, didactics, and inpatient management for the Reconstructive Urology service. Common issues encountered and treated on this service include incontinence, urethral stricture disease, erectile dysfunction, Peyronie's disease, voiding dysfunction, pelvic organ prolaspe, and neurogenic bladder. At the conclusion of the two-week elective rotation, students will be able to take a focused urologic history and physical, understand the basics of evaluation and management of Reconstructive Urology issues, and appreciate the medical and surgical modalities utilized to diagnose and treat these patients. Additionally, the students will gain a familiarity with the use of evidence-based medicine as it applies to Reconstructive Urology.

UROL 5640. ACE: Urology. This ACE will encompass the care of the surgery patients admitted to the Urology service. The student will be expected to function as a member of the team at a supervised level for patient management and communication with other healthcare providers. This will include preparing the admission history and physical examination, entering orders, writing daily progress notes, presenting patients on daily work rounds, participating in surgical procedures, and coordinating discharge planning. Students will be additionally be given opportunity for outpatient experiences in the clinics. Students will be expected to participate in select weekend rounds and assist with triage of consults for the inpatient service.

UROL 6100. Special Clinical Study: Urology, VU. Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

UROL 7100. AWAY ACE: Urology. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

Clinical Investigation

Courses leading to the Master of Science in Clinical Investigation

MSCI 5000. Drug and Device Development. This seminar styled course is designed to provide an overview of the drug and device development process and will include issues of drug discovery, pre-clinical drug development, Phase I through IV human testing, device development and the role of the FDA in regulatory affairs. Learning objectives will include: 1. To provide an overview of the drug development process from initial compound discovery, through clinical trials, to post-marketing issues; 2. To provide an overview of device development, and to contrast this to the process of drug development; 3. To provide some insight into the function of the Food & Drug Administration(FDA); 4. To discuss topical issues related to drugs, devices, and the FDA by using current events in the news. [3]

MSCI 5001. Grant Writing. [Also listed as PUBH 5517] This course provides a foundation in grant writing for the early career scientist. Core topics include an overview of funding agencies and award mechanisms, as well as how to identify funding opportunities, plan an application, construct an impactful research plan, develop a budget, and succeed at grantsmanship. Optional sessions discuss career development awards, research mentorship, VUMC institutional awards and resources, VA grants, NIH biosketch development, and training in the responsible conduct of research. Students will also learn how grants are reviewed and scored, complete a grant review, and participate in a mock study section. [1]

MSCI 5002. Medical Writing for Clinical Investigators. This course is designed to teach clinical investigators medical writing skills required to publish scientific articles in a peer-reviewed medical journal. Since trainees in the MSCI program are expected to complete their Master's thesis based on their research project in the Spring of year 2, this course is scheduled prior to this deadline to assist students in writing their thesis/ paper. Teaching will consist of demonstrations and discussions of how to improve the writing quality using each student's thesis-in-progress as an example. Students will be expected to write and revise their Master's thesis as course-work, no additional written assignments will be required. [2]

MSCI 5003. Genetics, Genomics, and Molecular Medicine. The main goal of this course is to provide an up to date perspective in genomics as it applies to clinical practice and medical research and thus to enhance knowledge and skills in this rapidly evolving field. This course is designed to give physician and life-scientist trainees an overview of genomic medicine and how best to utilize it in both clinical practice and research projects. The course will introduce students to key concepts in genetics and how these concepts affect genomic data interpretation and study design. Students will learn about a number of approaches that can be used to biologically test these data. The course format will be a mix of interconnected lectures, hands-on workshops, supplemented by online training modules. [4]

MSCI 5005. Case Studies in Clinical Investigation I. The Case Studies I course is designed to utilize a studio process to enrich trainee research. Studios are structured, dynamic sessions which bring together relevant research experts with the purpose of enhancing research quality, improving funding success, fostering advances in clinical practice and improvements in patient health, increasing publications and generating new hypotheses. Participants include 2-6 experienced faculty, your mentor, your MSCI peers, and the MSCI program directors. You choose the most appropriate studio depending on the stage of your research: hypothesis generation, aims, study design, implementation, analysis and interpretation, translation, manuscript development, or grant development. Presentations should be conducted as if presenting at a research conference. Attendance at peers' studios is expected as it will foster critical thinking from an interdisciplinary approach, collegiality, and collaboration. [1] **MSCI 5015. Biostatistics II.** The primary focus of Biostatistics II is the multivariable regression model which is the fundamental tool that researchers use for prediction, effect estimation, and hypothesis testing. This course covers the most commonly used regression models (linear, logistic, ordinal, time-to-event, and serial) plus general methods applicable to all regression models such as restricted cubic splines, bootstrapping, multiple imputation for missing data, model diagnostics, and validation. There is an emphasis on aspects related to clinical and translational study design.

MSCI 5016. Research Skills. This course offers basic instruction and practical advice on a variety of issues and skills related to the conduct of clinical research, often with computer demonstrations. First or second year. Fall, Spring. [1]

MSCI 5017. Clinical Scientist Career Seminars. This seminar series, conducted in conjunction with the office of Clinical and Translational Scientist Development, features two pathways based on the trainee's current career stage: Translational Bridge - Post-doctoral MD and PhD investigators completing training and establishing careers in clinical and translational research; Newman Society - Junior faculty members pursuing a career as a physician-scientist or as a clinical educator with significant clinical research involvement. Topics of discussion will include academic 'rules of the road', time management, promotion/tenure issues, publication compliance, independence, scientific branding, grants management, and overall program evaluation. Trainees will also submit a poster abstract to the annual Clinical and Translational Research Forum hosted in the fall. The seminars occur throughout the MSCI matriculation. [1]

MSCI 5021. Master's Research I. Trainees will participate in this course throughout the first and second years of the MSCI program. The Master's Research course, along with the Case Studies series, is designed to guide trainees to the successful completion of the Master's Final project. All trainees are required to spend a minimum of 80% time in research activities, which include didactic coursework and activities within the mentor's lab. [1]

MSCI 5022. Master's Research II. Trainees will participate in this course throughout the first and second years of the MSCI program. The Master's Research course, along with the Case Studies series, is designed to guide trainees to the successful completion of the Master's Final project. All trainees are required to spend a minimum of 80% time in research activities, which include didactic coursework and activities within the mentor's lab. [3]

MSCI 5023. Master's Research III. Trainees will participate in this course throughout the first and second years of the MSCI program. The Master's Research course, along with the Case Studies series, is designed to guide trainees to the successful completion of the Master's Final project. All trainees are required to spend a minimum of 80% time in research activities, which include didactic coursework and activities within the mentor's lab. [3]

MSCI 5024. Case Studies in Clinical Investigation II. The Case Studies II course provides an opportunity to present and discuss the progress and results of the trainees' primary MSCI project. In accomplishing this goal, the course utilizes a studio process and/or presentation format. You choose the most appropriate format depending on the stage of your research: presentation, manuscript studio, data analysis studio, or grant review studio. Studios will be conducted in the same manner as in Case Studies I. Presentations should be conducted as if presenting at a research conference. Attendance at peers' studios is expected as it will foster critical thinking from an interdisciplinary approach, collegiality, and collaboration. [1] **MSCI 5025. Research Extension.** This course allows for an extension on the research project. [0]

MSCI 5028. Data Management for Clinical Research. This course is designed to teach important concepts related to research data planning, collection, storage and dissemination. Instructional material will cover best-practice guidelines for 1) investigator-initiated & sponsored research studies, 2) single- & multi-center studies, and 3) prospective data collection & secondary-reuse of clinical data for purposes of research. The curriculum will balance theoretical guidelines with the use of practical tools designed to assist in planning and conducting research. Real-world research examples, problem solving exercises and hands-on training will ensure students are comfortable with all concepts. [1]

MSCI 5029. Research Ethics and Scientific Integrity. This course is a systematic examination of the ethical concepts and standards of responsible conduct of research in biomedical science and clinical investigation. Its aim is to provide post-doctoral and graduate trainees in clinical research a framework in which to recognize, examine, resolve, and prevent ethical questions and conflicts in their professional work. Objectives-Upon successfully completing this class, students will be able to: 1. Trace the historical development and critique concepts of scientific integrity and research ethics, including legal and socio-religious influences, in biomedical science and clinical investigation; 2. Recognize, identify, and analyze questions central to the ethical problems in biomedical science and clinical research using relevant professional and regulatory standards; 3. Formulate recommendations for preventing and/or resolving ethical conflict in biomedical science and clinical research and promoting responsible conduct of research; and 4. Identify the appropriate institutional resources for addressing questions related to ethics and integrity in biomedical science and clinical research in academic and nonacademic settings. [1]

MSCI 5030. Epidemiology I. Introduction to epidemiology with an emphasis on clinical practice. Includes use of data to study disease etiology, prognosis and treatment. concepts of interpreting tests, predicting outcomes, choosing treatments and reading medical literature emphasized. First year. Fall. [4]

MSCI 5044. Clinical Trials. This course will cover design and data analysis for clinical trials in biomedical research. Primary topics include specification of study objectives, design options, ethical guidelines, randomization, blinding, sample size determination and power analysis, interim monitoring and data analysis appropriate for parallel, crossover, nested, factorial and group allocation designs. Other topics include role of FDA in the drug approval process, adaptive trial designs, non-inferiority trials and bio-equivalence trials. Emphasis is on practical use of methods rather than formal statistical theory. [3]

MSCI 5099. Independent Study. Students may choose a topic for independent study. This course is graded pass/fail. [1-5]

Audiology

Courses leading to the Doctor of Audiology

AUD 5216. Introduction to Billing and Coding for Audiology Services. This course is an overview of coding and compliance requirements for billing in an audiology practice. Topics include: managed care terms, insurance contracting, billing terminology, Medicare, Medicaid, CPT, ICD 9, ICD 10, HCPCS, and modifiers. Spring Semester, [1].

AUD 5227. Anatomy and Physiology of Hearing Mechanisms. A comprehensive description of the anatomy and physiology of the peripheral and central auditory systems in normal and impaired populations. Includes a clinically oriented review of neuroanatomy focused on the major sensory and motor pathways. Fall. [3]

AUD 5233. Neuroscience. A comprehensive introduction to the field of neuroscience from important molecules to cell function, neural systems, and 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. Spring. [3] Smith.

AUD 5303. Hereditary Hearing Loss. Hereditary aspects of hearing loss in infants, children, and adults. Genetic bases of hearing loss, modes of inheritance, characteristics of syndromic and non-syndromic hearing losses. Collaboration with geneticists and genetic counselors. Recent developments and issues in evaluating and managing patients with genetic hearing loss. Summer. [2]

AUD 5310. Measurement of Hearing. The theory and practice of hearing measurement, with emphasis on routine clinical and screening audiometric techniques, testing environment, audiometric standards and calibration, applied impedance measurements, and interpretation of audiometric tests. Fall. [4]

AUD 5318. Educational Audiology and Aural Habilitation for Children. A survey of approaches to aural rehabilitation for children. Specific focus will be on intervention for children with hearing loss in educational and other habilitative settings. Spring. [3]

AUD 5325. Pediatric Audiology. A survey of methods and procedures used in the evaluation of the auditory function and management of neonates, infants, and young children. Includes identification and intervention procedures. There will be review of special populations of children with hearing loss. Fall. [3]

AUD 5328. Psychoacoustics. Psychoacoustic theory and methods. Auditory perception in normal hearing and hearing impaired subjects. Spring. [3]

AUD 5332. Pathology of the Auditory System. A study of pathologies involving the peripheral auditory system arising from genetic factors, disease, and trauma, with emphasis applied to presenting signs/symptoms, and medical/audiological management. Fall. [3]

Information has been updated since the initial printing. See the original attached to this file.

AUD 5337. Auditory Clinical Electrophysiology. This course will cover basic concepts in electrophysiological and electromagnetic recordings (e.g., electrode types/uses, far and near field recordings, volume conduction, dipole sources). Recording of both near and far-field electrical responses emitted by peripheral and central nervous system will be studied. Recording techniques and interpretation of conventional clinical evoked potentials (e.g., electrocochleography, auditory brainstem response, sonomotor responses, electroneurography) will be covered. Special topics will include: audiometric applications of these evoked potentials (e.g., for infant hearing screening and special needs populations, and intraoperative neurophysiological monitoring). There will be extensive laboratory practica conducted within and outside the classroom. Spring. [3]

AUD 5339. Amplification I. Background and development of the design of hearing aids, ear mold acoustics, electroacoustic characteristics, performance standards and measurement techniques, clinical selection and evaluation procedures. Corequisite: AUD 5340. Spring [2]

AUD 5340. Lab: Amplification I. Laboratory that stresses instruction and practice in basic hearing aid techniques including Otoscopic examination, ear impressions, electroacoustic evaluation and probe microphone techniques. Corequisite: AUD 5339. Spring [1]

AUD 5345. Amplification II. Advanced topics in amplification including advanced probe microphone techniques, single and multi-channel compression systems, analog and digital signal processing, and current and emerging prescriptive and fitting verification methods. Fall. [3]

AUD 5346. Vestibular Sciences I. This course offers an in-depth approach to the basic assessment of the dizzy patient. Subject matter will include; where the vestibular system assessment falls in the audiology scope of practice, detailed anatomy and physiology of the peripheral and central vestibular, ocular motor, and postural control systems; bedside testing, introduction to both electrical and video techniques for recording the vestibulocular reflex; case history and bedside assessment of the dizzy patient, and the technique and interpretation of video and electronystagmography. Students will be expected to conduct practica outside the classroom. Fall. [3]

AUD 5347. Vestibular Sciences II. This course will focus on the description of advanced assessment techniques including whole body, yaw axis sinusoidal harmonic acceleration testing and step testing, and techniques for the assessment of the otolith system including on and off-axis centrifugation, and both cervical and ocular vestibular evoked myogenic potentials. A module will be taught on the topic of peripheral and central disease and disorders affecting the vestibular system. Embedded in this module will be a section describing the multidimensional assessment of falls risk, disequilibrium of aging and the medical/surgical and non-medical management (i.e., vestibular rehabilitation) of vestibular test battery form predictable patterns. Students will be expected to conduct practica outside the classroom. Prerequisite: successful completion of Vestibular Sciences I. Summer. [3]

AUD 5350. Vestibular Sciences III: Sensory and Motor Control of Posture. This course will cover the neural mechanisms of postural control. Multisensory integration and biomechanics that contribute to static and dynamic posture will be explored. Normal and abnormal development, aging, and learning will be presented. The effects of pathology on postural control will be discussed. Technology including computerized dynamic posturography will be used to demonstrate concepts. Prerequisite: Successful completion of Vestibular Sciences I and II, or permission from the instructor. Fall. [2]

AUD 5353. Amplification III and Special Topics in Hearing. Selection and evaluation of auditory prostheses for listeners with hearing loss. Industrial audiology including testing, training, and intervention protocols. A discussion of noise levels, OSHA guidelines, noise-induced hearing loss, and hearing protection in work and leisure activities. Evaluation and treatment of tinnitus Spring. [3]

AUD 5354. Cochlear Implants. This course covers basic principles of electrical stimulation of neural tissue, cochlear implant design, as well as the history of cochlear implants. Further it will cover current issues in the

medical, audiological, speech/language, and educational management of adults and children with cochlear implants—emphasis on multidisciplinary team function. Prerequisite: AUD 5318. Spring. [3]

AUD 5355. Clinical Externship. Graded pass/fail. Fall, Spring. Summer. [3]

AUD 5357. Internship / Externship: Audiology Specialty Track. A three-week, intensive, full-time clinical placement during the month of May in an audiology specialty area to meet the student's individual interests and needs. Summer, Spring. [2]

AUD 5359. Audiometric Instrumentation and Calibration. An introduction to fundamental concepts in electronics and computer science and to instrumentation used in the hearing clinic or research laboratory for producing, measuring, and analyzing audio signals. Standards and procedures for calibration measurements, with practical hands-on experience. Fall.[3]

AUD 5361. Family-Centered Counseling and Interviewing. Examines the helping relationship in the clinical process, counseling theory relative to audiology practices, and principles and methods of effective clinical interviewing and counseling. Summer. [2]

AUD 5365. Business and Financial Management. An overview of accounting practices, marketing, and operations management as they relate to management of an audiology practice. Topics discussed include financial reporting, budgeting, pricing, billing and coding, regulatory issues, and human resource management. Students are required to design an audiology practice and develop a business plan as part of this course. Spring. [3]

AUD 5367. Professional Issues and Ethics for Audiologists. Examines professional issues in audiology including malpractice, quality improvement, marketing, credentialing, diversity, and legislation. Emphasis will be given to issues of ethics and clinical integrity in the practice of the profession of audiology. Fall. [2]

AUD 5368. Clinical Research Design and Statistical Analysis. Covers reliability, internal and external validity of group study designs, single subject designs, basic descriptive and inferential statistics, core measures in epidemiology, and conventions for reporting statistics. Summer. [3]

AUD 5369. T35 Research Course. This course is part of the NIH-NIDCD T35 Research Traineeship Program in the Department of Hearing and Speech Sciences. This course will encompass the research traineeship activities in individual laboratories, lectures, and group discussions related to rigor and reproducibility in science, responsible conduct in research, and key issues important to research career and practices. Students will present and lead a journal discussion relevant to the research they are working on in their respective laboratories, report on research activities, and participate in research discussions. Summer [6].

AUD 5374. Overview of Intraoperative Monitoring. A basic introduction to intraoperative neurophysiologic monitoring, including observation time in the operating room. Maymester. [1]

AUD 5580. Introduction to Clinical Case Conference. This course introduces students to the weekly case conference where clinical case studies will be presented. Fall. [1]

AUD 5581. Capstone I. Capstone projects may take several forms including research-based investigations, evidence-based position papers, business plans, critical literature reviews with applications to clinical problem solving, grant proposals, development of clinical protocols based on published research findings, etc. In Capstone I, students will identify an appropriate capstone committee and define their capstone projects and submit and defend a capstone proposal. Fall, Spring, Summer. [3]

AUD 5582. Capstone II. In Capstone II, students will complete their capstone project. The capstone project culminates in an oral defense of a formal manuscript which has been submitted to the student's capstone committee. Fall, Spring, Summer. [3]

AUD 5583. Practicum and Clinical Case Conference. This course includes attendance at weekly case conferences where clinical case studies will be presented (Fall and Spring only). The grade for this class will include clinical performance, case conference presentations (when assigned), and case conference attendance (when scheduled). Fall, Spring, Summer. [3]

AUD 5584. Independent Practicum. This course allows students to continue work toward degree requirements. Fall, Spring, Summer. [0]

AUD 5585. Practicum and Clinical Case Conference. This course includes attendance at weekly case conferences where clinical case studies will be presented (Fall and Spring only). The grade for this class will include clinical performance, case conference presentations (when assigned), and case conference attendance (when scheduled). Fall, Spring, Summer. [3]

Education of the Deaf

Courses leading to the Master of Education of the Deaf

MDE 5207. American Sign Language I. This introductory course includes basic communication skills of American Sign Language and "contact" language (e.g., nonmanual markers, fingerspelling, numbers, basic vocabulary, classifiers), the sign system continuum, culture implications, and media resources available. Open to all Hearing and Speech students. Requires faculty approval. Fall only. [3]

MDE 5208. American Sign Language II. This is an intermediate course in American Sign Language that includes an in-depth look at the linguistics of ASL (e.g., morphology, syntax, phonology, and semantics) and current readings and research in the field. Prerequisite: one 3-credit, college level course in ASL. Requires faculty approval. Spring only. [3]

MDE 5308. Language and Literacy in Children with Hearing Loss. This course presents an overview of normal language acquisition and the challenges imposed by a hearing loss. A variety of methods and materials to develop oral and written language and reading will be included. Practical methods of assessment, supportive strategy development, and curricular adaptations for children with hearing loss will be explored. Summer, [3]

MDE 5312. Psychology and Culture of the Deaf. Presentation and discussion of significant historical and current issues relating to the deaf population. Primary focus will be on psychological development, educational/methodological models, and deaf culture. Although the principal focus is on the psycho/social and cognitive/intellectual development of deaf individuals through the lifespan, a general survey of other areas of exceptionality is made with emphasis on the implications for the deaf child with additional disabilities and/or special needs. Spring. [2]

MDE 5320. Introduction to Amplification for Infants and Children. Designed for deaf education and speech language pathology students. Current issues and trends in conventional amplification for infants and children. Selection, fitting, verification, and validation of traditional amplification options will be addressed including directional vs. omnidirectional microphones, analogue vs. digital instruments, monaural vs. bilateral fittings, and real-ear measures vs. functional aided gain. Hearing aid retention, maintenance, and troubleshooting techniques are addressed. Fall. [1-2]

MDE 5322. Children with Hearing Loss & Additional Disabilities. A survey of methods, procedures, and observational techniques used in the identification and evaluation of children with physical, cognitive, and/or emotional disabilities. An interdisciplinary perspective informs the course with particular attention to identifying characteristics of special populations that are atypical of children with hearing loss. Summer. [3]

MDE 5354. Cochlear Implants. This course covers basic principles of electrical stimulation of neural tissue, cochlear implant design, as well as the history of cochlear implants. Further it will cover current issues in the medical, audiological, speech/language, and educational management of adults and children with cochlear implants—emphasis on multidisciplinary team function. Prerequisite: AUD 5318. Spring. [2]

MDE 5356. Internship/Externship: **MDE/Specialty Track.** A threeweek, intensive, full-time clinical or classroom placement during the month of May in an auditory-oral environment designed specifically to meet the student's individual interests and needs. Summer, Spring. [2]

MDE 5358. Field Experience in Deaf Education. Students will develop appropriate skills for providing services to children with hearing loss in

group settings; will collaborate with professionals in audiology and speech/ language pathology; will plan sessions for family-centered intervention emphasizing communication development or plan lessons; will prepare or review individual family service plans (IFSPs) or individual education plans (IEPs); will assess speech, language, listening, cognitive, motor, and social development of children; and will evaluate effectiveness of services. Fall, Spring [3]; Summer [2]

MDE 5372. Seminar in Deaf Education. Supports student development of organizational skills that will facilitate the completion of requirements for the master's degree in education of the deaf and the transition from graduate school to a profession in deaf education. Emphasis is placed on the development of a professional portfolio, a review of certification requirements, and skill development in job searching including resume writing and interviewing skills. Spring. [3]

MDE 5390. Curriculum and Methods for Deaf Children. Presentation and discussion of current issues, methods, and materials involved in providing successful educational programming for children with hearing loss both in special programs and in inclusionary settings. This includes the adaptation of regular curriculum and instructional procedures for students with hearing impairments. Focus is on assessment of academic skills and individualizing instruction. Students gain practical experience in planning, carrying out, and evaluating lessons and are exposed to a variety of educational materials and methods. Spring. [3]

MDE 5392. Teaching Children with Hearing Loss to Listen and Speak: Early Childhood Development. Theories of and methods for developing auditory perception and spoken language skills in deaf and hard-of-hearing children. The purpose of this course is to increase students' skills in assessing and developing speech, auditory functioning, and phonologic awareness in deaf and hard-of-hearing children in early childhood development. Fall. [2]

MDE 5393. Educational Assessment for Children with Hearing Loss. The purpose of this course is to introduce students to effective assessment tools and strategies specifically for children with hearing loss. Students will become familiar with state testing protocols, and accommodations and modifications necessary for student success. Spring. [2]

MDE 5394. Educational Programming and Service Delivery for Children with Hearing Loss. The course will include planning, execution, and evaluation of Individualized Education Plan (IEP) parent meetings as they relate to young children with hearing loss. The focus of this class will be on two child/family case scenarios. Students will work in multidisciplinary teams to develop and implement IEPs to be conducted in the Center for Experiential Learning and Assessment (CELA). Finally students will review videotaped sessions of each case scenario to reflect upon their role and responsibilities as members of the IEP team. Summer. [1]

MDE 5584. Independent Practicum. This course allows students to continue work toward degree requirements. This course is graded pass/fail. Fall, Spring, Summer. [0]

MDE 5585. Independent Study and Readings in Deaf Education. Fall, Spring, Summer. [1-3]

Speech-Language Pathology

Courses leading to the Master of Science (Speech-Language Pathology)

SLP 5235. Physiological Bases of Communication I. Term 1—the bases of speech production and perception relative to neuroanatomy, anatomy, physiology, acoustics, and acoustic correlates and sound features. Neural mechanisms of speech and language will be related to overall structure and function of the nervous system. Neurologic conditions related to speech and language disorders are surveyed. Fall. [3].

SLP 5236. Physiological Bases of Communication II. Term 2—the bases of speech production and perception relative to neuroanatomy, anatomy, physiology, acoustics, and acoustic correlates and sound features. Neural mechanisms of speech and language will be related to overall structure and function of the nervous system. Neurologic conditions related to speech and language disorders are surveyed. Spring. [1].

SLP 5240. Introduction to Clinical Practicum. This course is for first year, first semester MS-SLP graduate students. Topics covered will include professionalism, safety issues, components of therapy session and time management, data collection, behavior management, learning objectives/goal setting, implementing treatment plans, treatment approaches for various diagnoses. This course is graded pass/fail. Fall. [1]

SLP 5280. Child Language Impairments I: Nature. This course is the first in a three-course sequence on child language impairment. The focus of this course is on the characteristics of children with primary as well as secondary language impairment. Students will read the primary research literature (a) to learn skills for comprehending and interpreting the research literature, and (b) to gain knowledge on the linguistic and non-linguistic skills of subgroups of children with language impairment and children at risk for academic failure. In addition, an overview of the Individuals with Disabilities Education Act is provided. The lab component develops basic skills in language sample analysis. Fall. [2]

SLP 5281. Child Language Impairments IIa: Assessment. The primary focus is assessment of developmental and academic oral language skills, birth through high school, with a secondary focus on reading, writing, and intellectual assessment. Assessment measures include developmental scales, commercially published norm-referenced measures, criterionreferenced instruments, research-validated experimental measures, and progress monitoring tools. In addition, students gain knowledge and skills in collaborating with families and teachers on assessment of children's linguistic abilities. Students develop knowledge and skills to select and implement appropriate assessment instruments, to interpret assessment findings for differential diagnosis and IDEA eligibility, for determination of child and family strengths and needs, and to apply assessment findings for describing present level of performance, writing IEP/IFSP goals and objectives, and planning intervention. The lab component of this course will focus on application and practice of assessment measures and interpretation of assessment findings for families and teachers. Part A of the course focuses on developing students' knowledge of child language assessment methods. Fall. [1] Schuele

SLP 5282. Child Language Impairments IIb: Assessment. The primary focus is assessment of developmental and academic oral language skills, birth through high school, with a secondary focus on reading, writing, and intellectual assessment. Assessment measures include developmental scales, commercially published norm-referenced measures, criterionreferenced instruments, research-validated experimental measures, and progress monitoring tools. In addition, students gain knowledge and skills in collaborating with families and teachers on assessment of children's linguistic abilities. Students develop knowledge and skills to select and implement appropriate assessment instruments, to interpret assessment findings for differential diagnosis and IDEA eligibility, for determination of child and family strengths and needs, and to apply assessment findings for describing present level of performance, writing IEP/IFSP goals and objectives, and planning intervention. The lab component of this course will focus on application and practice of assessment measures and interpretation of assessment findings for families and teachers. Part B of the course focuses on application of child language assessment methods. Spring. [1] Schuele

SLP 5283. Child Language Impairments III: Intervention. This course is the third in a three-course sequence on child language impairments. The focus is evidence-based interventions that develop linguistic skills, primarily preschool through high school. The primary focus is on oral language skills, but literacy skills will be addressed as well (emergent literacy, decoding, spelling, reading comprehension, written expression). Intervention methods will include direct interventions with children as well as collaborative interventions delivered in conjunction with teachers and families. Students will learn to comprehend and interpret intervention research, to apply research to practice and explain the evidence base for specific clinical decisions, and to understand IDEA as it relates to school-based intervention. The lab component of the course focuses on the implementation of specific intervention strategies, procedures, and programs. Spring. [2]

SLP 5301. Acoustics and Perception of Speech and Speech Disorders. An examination of the processes of speech production, acoustics, and perception. Emphasis on relevant literature and research techniques in speech science. Fall. [3]

SLP 5304. Child Language Acquisition. The components and processes of normal language development. Relations between language acquisition and social and cognitive aspects of child development as well as literacy development. Survey of developmental psycholinguistic research. This course is appropriate for graduate students with or without previous coursework in language development. Fall. [3]

SLP 5305. Clinical Principles and Procedures. Presentation and demonstration of clinical principles and procedures applicable in communication sciences and disorders. Fall. [2]

SLP 5311. Stuttering. Significant research in the field of stuttering, with emphasis on etiology and therapy. The management of fluency disturbances. Spring. [3]

SLP 5314. Articulation Disorders and Clinical Phonetics. The etiology, evaluation, and management of articulatory defects in children and adults. Prerequisite: consent of instructor. Fall. [3]

SLP 5316. Motor Speech Disorders. A study of the nature and treatment of the adult and childhood dysarthrias and dyspraxias of speech. Management of infants and young children at neurological risk for developing motor speech disability. Rights of the severely communicatively disabled. Spring. [2]

SLP 5317. Traumatic Brain Injury. Pathophysiology of traumatic brain injury in children and adults; unique and common sequelae, the evaluation and treatment of cognitive/communicative deficits, and special problems of the population. Prerequisite 5300 or 5331 or consent of instructor. Summer. [2]

SLP 5319. Dysphagia. The study of the normal and disordered swallow in pediatric and adult populations. Anatomy and physiology, videofluoroscopic and other assessment procedures, as well as various treatment alternatives and techniques are included. Fall. [3]

SLP 5323. Communication in Autism Spectrum Disorders. The course addresses basic theories and principles associated with communication assessment of and intervention for children with Autism Spectrum Disorders. Auditory characteristics, causative factors, classroom structure, behavior management, communication strategies, social and peer interaction, and family-focused practices are also reviewed. This class also will provide an overview of typical social, play, and linguistic development compared to the features and behavioral characteristics of autism spectrum disorders (ASD). Fall.[2]

SLP 5324. Feeding and Swallowing Disorders in Children. This course focuses on the assessment, diagnosis, and management of dysphagia in children including the role of the speech-language pathologist and multidisciplinary and family-centered, family-supported management. Prerequisite: SLP 5319. [1]

SLP 5326. Speech Disorders in Craniofacial Anomalies. The etiology, diagnosis, and management of speech defects associated with craniofacial anomalies, with major emphasis on cleft palate. Summer. [1]

SLP 5331. Aphasia. The study of aphasia in adults, including the neuronanatomical basis, etiologies, symptomatology, assessment, differential diagnosis, and treatment. Spring. [3]

SLP 5335. Augmentative and Alternative Communication. This course will cover the theory, rationale, and methods for use of augmentative and alternative communication (AAC) systems with patients with physical, intellectual, and/or cognitive disabilities. Students will be exposed to various low- and high-technology AAC systems and learn how and when to apply each in the treatment of patients with complex communication needs. Fall. [2]

SLP 5336. Voice Disorders. Theories of voice production, with emphasis upon underlying mechanisms that cause vocal defects. Procedures for group and individual management. Summer. [2]

SLP 5338. Research Methods in Communicative Disorders. Research techniques and procedures. Analysis of research examples from the literature. Study of design of experiment, data collection, statistical analysis, and presentation of research findings. Fall. [1]

SLP 5355. Clinical Internship/Externship. Sequence of clinical practicum placements over five semesters for speech-language pathology majors in clinical track. Designed to meet supervised practicum requirements for eventual certification by American Speech-Language-Hearing Association. Sequence of initial part-time internship placements in campus and other local facilities, followed by a full-time externship placement at one of many selected sites throughout the country or abroad. Spring, Summer [6]

SLP 5357. Professional Issues in Communication Disorders. Examines various professional issues within the fields of speech-language pathology and audiology. For example, ethics, malpractice, quality improvement, marketing, reimbursement, multicultural sensitivity, and federal legislation. Spring [1]

SLP 5360. Voice Specialty Track Acute Care Experience. This course is designed to expose students to clinical practice in an acute care setting as it pertains to voice and upper airway disorders. Students will observe diagnosis and treatment of communication and swallowing disorders in patients with laryngectomy and other head and neck cancers, in patients with tracheostomy and on ventilators, and with other populations as available. Students will have the opportunity to provide some direct patient care. This course is graded pass/fail. Summer. [1]

SLP 5361. Family-Centered Counseling and Interviewing. Examines the helping relationship in the clinical process, counseling theory relative to speech-language pathology practices and principles and methods of effective clinical interviewing and counseling. Spring [1]

SLP 5378. Seminar in Medical Speech Pathology. This advanced seminar will discuss the scope of medical speech pathology with emphasis on the practice of speech-language pathology as it impacts health status across the continuum of care. In this course, students will have the opportunity to explore the scope of medical speech pathology across the continuum with attention to special topics such as pharmacology and brain imageing. There will be a focus on interprofessional roles and practice. The concept of competency and specialty practice will also be addressed. Standards of evidence-based practice will evaluated as they apply to this sphere of practice.

SLP 5388. Independent Study/Readings in Speech Pathology. Independent Study/Readings in Speech Pathology. Fall, Spring, Summer [1-3]. Varies.

SLP 5391. Advanced Voice Research and Rehabilitation. This advanced seminar will discuss historical and current research in the assessment and treatment of voice disorders. Emphasis will be placed on understanding the theoretical basis of clinical practice in voice and applying standards of evidence-based practice to evaluating therapeutic methods. Prerequisite: Enrolled as master's degree student in Hearing and Speech Sciences Program. This course is graded pass/fail. Fall.[1]

SLP 5397. Speech-Language-Literacy Seminar. Course limited for enrollment to graduate speech-language pathology masters students who are enrolled in the School Speech-Language Pathology Specialty Track. Topics vary each semester; a two-year curriculum of topics prepares students for school-based practice of speech-language pathology.

SLP 5583. Practicum and Clinical Case Conference. This course includes attendance at weekly case conferences where clinical case studies will be presented (Fall and Spring only). The grade for this class will include clinical performance, case conference presentations (when assigned), and case conference attendance (when scheduled). Fall, Spring, Summer. [1]

SLP 5584. Independent Practicum. This course allows students to continue work toward degree requirements. This course is graded pass/fail. Fall, Spring, Summer. [0]

SLP 5587. Advanced Clinical Practicum/Case Conference. This course includes attendance at weekly case conferences where clinical case studies will be presented. It reflects additional load of clinical training. The grade for this class will include case conference attendance as well as

clinical performance and attendance. Prerequisite: 4 credits of SLP 5583. Spring [3]

SLP 7999. Master's Thesis Research. [Formerly SLP 5369] Master's Thesis Research. This course is graded pass/fail. Fall, Spring, Summer [1]

Laboratory Investigation

Courses leading to the Master of Laboratory Investigation

MLI 5040. Responsible Conduct in Research. [Formerly MLI 1040] This required course includes formal lectures and small group discussion on a range of issues encountered in research activities. Included are responsibilities of the investigator and the university to the federal government; scientific misconduct; ethical use of animals in research; ethics of publication, lab management, and grant writing. Summer. [0]

MLI 6020. Research Project. [Formerly MLI 3020] This course is designed for students who choose the modified research track. Students will conduct research and present their research formally, but a thesis will not be a requirement. Research must be conducted outside of one's job requirements. Fall, Spring, Summer. [0-6].

MLI 6025. Independent Study. [Formerly MLI 3025] This course allows a student to pursue individualized professional research or training goals. Fall, Spring, Summer [0-4]

MLI 7999. Thesis Research and Defense. [Formerly 3010] This course is designed for students who choose the thesis track and will develop a research project and thesis under the direction of a mentor. Fall, Spring, Summer. [1-12].

Medical Physics

Courses leading to the Doctor of Medical Physics and the Master of Science in Medical Physics

Diagnostic Radiology

RAMD 5301. Medical Physics Seminar I. Topics in medical imaging, techniques and applications. Fall, Spring. [1]

RAMD 5313. Clinical Diagnostic Physics. Instrumentation and application of physics to clinical diagnostic imaging procedures including radiographic and fluoroscopic x-ray, CT, MRI, nuclear medicine, and ultrasound. Fall. [3]

RAMD 5317. Laboratory In Clinical Diagnostic Physics. Laboratory In the application of principles, techniques, and equipment used in radiographic and fluoroscopic x-ray, CT, MRI, nuclear medicine, and ultrasound. Fall. [2]

RAMD 5331. Physics of Medical Imaging. Physical, mathematical, and signal processing concepts associated with medical image formation and analysis. Introduction to techniques used to generate medical images using ionizing radiation, non-ionizing radiation, and sound waves. Medical imaging modalities to be discussed include general radiography, Computed Tomography, Nuclear Medicine (SPECT and PET), Magnetic Resonance, and Ultrasound.

RAMD 5340. Clinical Diagnostic Physics I. Instrumentation and application of physics to clinical diagnostic imaging. Emphasis placed on projection x-ray methods as well as computed tomography. Coursework includes an applied laboratory with hands-on experience with relevant equipment. [4]

RAMD 5350. Clinical Diagnostic Physics II. Instrumentation and application of physics to clinical diagnostic imaging. Emphasis will be placed on Ultrasound, Nuclear Medicine, Positron Emission Tomography and Magnetic Resonance Imaging. Coursework includes an applied laboratory with hands-on experience with relevant equipment.[4]

RAMD 5390. Master's Independent Study (Diagnostic). Introductory problem solving topic in diagnostic medical physics including data taking, analysis, and write-up. [1-2]

RAMD 5391. Medical Physics Diagnostic Practicum I. Experience and training in a diagnostic physics clinical setting; instrumentation methodology, calibration, and quality assurance. This course also includes diagnostic radiology patient interaction, clinical conference attendance, and review of imaging techniques in radiology. [1-4]

RAMD 5392. Medical Physics Diagnostic Practicum II. Experience and training in a diagnostic physics clinical setting; instrumentation methodology, calibration, and quality assurance. This course also includes diagnostic radiology patient interaction, clinical conference attendance, and review of imaging techniques in radiology. [1-4]

RAMD 5393. Doctoral Independent Study I. Advanced problem solving topic in diagnostic medical physics including literature survey, data taking, analysis, and manuscript submission. [1-3]

RAMD 5394. Doctoral Independent Study II. Advanced problem solving topic in diagnostic medical physics including literature survey, data taking, analysis, and manuscript submission. [1-3]

RAMD 5395. Medical Physics Clinical Rotations I. Advanced experience and clinical training in a diagnostic radiology department setting; instrumentation (methodology and calibration), quality assurance, and problem solving. For third- and fourth-year doctoral students. Fall, Spring, Summer. [3-6]

RAMD 5396. Medical Physics Clinical Rotations II. Advanced experience and clinical training in a diagnostic radiology department setting; instrumentation (methodology and calibration), quality assurance, and problem solving. For third- and fourth-year doctoral students. Fall, Spring, Summer. [3-6]

RAMD 5397. Medical Physics Clinical Rotations III. Advanced experience and clinical training in a diagnostic radiology department setting; instrumentation (methodology and calibration), quality assurance, and problem solving. For third- and fourth-year doctoral students. Fall, Spring, Summer. [3-6]

RAMD 5401. Medical Physics Seminar II. Topics in medical imaging, techniques and applications. [1]

Therapeutic Radiology

RAMT 5248. Radiation Biophysics. Response of mammalian cells and systems to ionizing radiation, the acute radiation syndromes, carcinogenesis, genetic effects, and radiobiological basis of radiotherapy. Fall. [2]

RAMT 5301. Medical Physics Seminar I. Radiotherapy treatment techniques and current methodologies in clinical therapy physics. Fall. [1]

RAMT 5304. Radiation Interactions and Dosimetry. Theory and instrumentation of ionization measurements of high-energy photon and electron beams. Methods of radiation absorbed dose calculations for photons, neutrons, and charged particles. Fall. [3]

RAMT 5310. Introduction to Clinical Applications & Radiation Protection of Therapy & Diagnostic Imaging Physics. Introduction to the applications of radiation therapy physics in the clinical environment, elements of radiation protection in both radiation therapy and diagnostic imaging settings as they apply to health care professionals and the general population, and regulatory issues facing health care professionals in modern radiology and radiation oncology clinics. [3]

RAMT 5311. Clinical Therapy Physics I. Instrumentation and application of physics to clinical radiotherapy procedures, equations for absorbed dose calculations, phantoms, methodologies in computerized treatment planning, and introduction to the special techniques of IMRT, RAPID ARC, and stereoradiosurgery. Fall. [3]

RAMT 5312. Clinical Therapy Physics II. Photon and electron beam algorithms for dosimetry calculations. Methodologies in three-dimensional treatment planning with specific applications to radiotherapy. Spring. [3]

RAMT 5314. Clinical Therapy Physics: Lab I. Introductory laboratory applications of physics to clinical radiotherapy procedures, experience with equipment in a modern clinical radiotherapy environment, and methodology and techniques for the verifications of simulated clinical procedures. [2]

RAMT 5315. Clinical Therapy Physics: Lab II. Advanced laboratory applications of physics to clinical radiotherapy procedures, experience with radiotherapy physics equipment including measurement of absorbed dose using multiple dosimetry systems and techniques for the quality assurance verification of special radiotherapy clinical procedures. [2]

RAMT 5316. Brachytherapy Physics. Instrumentation and applications of physics to clinical brachytherapy procedures, equations for absorbed dose calculations including TG#43, methodologies in computerized treatment planning, and introduction to special techniques. [3]

RAMT 5390. Master's Independent Study (Therapeutic). Introductory problem-solving topic in therapy medical physics including data taking, analysis, and write-up. [1-2]

RAMT 5391. Medical Physics Therapeutic Practicum I. Experience and training in a radiotherapy physics clinical setting; treatment planning, instrumentation calibration, and quality assurance. This course also includes radiotherapy patient interaction, clinical conference attendance, and review of treatment techniques in radiation oncology. Fall, Spring, Summer. [1-4]

RAMT 5392. Medical Physics Therapeutic Practicum II. Experience and training in a radiotherapy physics clinical setting; treatment planning, instrumentation calibration, and quality assurance. This course also includes radiotherapy patient interaction, clinical conference attendance, and review of treatment techniques in radiation oncology. Fall, Spring, Summer. [1-4]

RAMT 5393. Doctoral Independent Study I. Advanced problem solving in therapy medical physics including literature survey, data taking, analysis, and manuscript submission. [1-3]

RAMT 5394. Doctoral Independent Study II. Advanced problem solving in therapy medical physics including literature survey, data taking, analysis, and manuscript submission. [1-3]

RAMT 5395. Medical Physics Clinical Rotations I. Advanced experience and clinical training in a radiation oncology department setting; treatment planning, instrumentation calibration, quality assurance, and problem solving. For third- and fourth-year doctoral students. Fall, Spring, Summer. [3-6]

RAMT 5396. Medical Physics Clinical Rotations II. Advanced experience and clinical training in a radiation oncology department setting; treatment planning, instrumentation calibration, quality assurance, and problem solving. For third- and fourth-year doctoral students. Fall, Spring, Summer. [3-6]

RAMT 5397. Medical Physics Clinical Rotations III. Advanced experience and clinical training in a radiation oncology department setting; treatment planning, instrumentation calibration, quality assurance, and problem solving. For third- and fourth-year doctoral students. Fall, Spring, Summer. [3-6]

RAMT 5401. Medical Physics Seminar II. Topics in clinical therapy physics, techniques and application. Fall. [1]

Public Health

Courses leading to the Master of Public Health

PUBH 5501. Epidemiology I. This course focuses on measures of disease frequency and association, observational study design, and diagnostic and screening tests. The course reviews the use of these tools and the role of epidemiology in measuring disease in populations, estimating risks, and influencing public policy. Study designs reviewed include cross sectional, ecologic, case-control, and cohort studies. Required for students in the MPH program.

PUBH 5502. Biostatistics I. This course addresses basic concepts and methods of biostatistics, including data description and exploratory data analysis, study design and sample size calculations, probability, sampling distributions, estimation, confidence intervals, hypothesis testing, non-parametric tests, analysis of continuous, categorical, and survival data, data analysis for cohort and case-control studies, relative risk and odds

ratio estimation, and introduction to linear and logistic regression. Required for students in the MPH program.

PUBH 5505. Public Health Ethics. This course examines the ethical dimensions of public health research, practice, and policy. Students will become familiar with the language and literature of public health ethics as they explore ethical dilemmas pertaining to the values, principles, rights, and beliefs that shape concepts of research and health care. This course is required for all students in the M.P.H. Program.

PUBH 5508. Epidemiology II: Non-randomized Study Design. This course addresses the design of non-randomized studies and factors that are important in design selection. This includes the design of cohort studies, prospective and retrospective cohort studies, assembly and followup of the cohort, exposure measurement, outcome ascertainment, confounders, effect modification, calculation of measures of occurrence and effect, summary of multivariate statistical analyses for cohort studies; the case-control study, conditions necessary for validity of the case-control study, selection of controls, sources of bias in case-control studies, and multivariate analysis; as well as the ecological study, including when to use and when to avoid. The course includes didactic lectures and critical reading of important epidemiologic studies from the current medical literature. This course is required for students in the Epidemiology track of the M.P.H. Program. Prerequisite: Epidemiology I, Biostatistics II, Clinical Trials, or approval of instructor. Enrollment is limited due to space restrictions, with priority given to students in the M.P.H. and M.S.C.I. programs.

PUBH 5509. Biostatistics II. This course addresses modern multivariate analyses based on the concept of generalized linear models. This includes linear, logistic, and Poisson regression, survival analysis, fixed effects analysis of variance, and repeated measures analysis of variance. The course emphasizes underlying similarity of these methods, how to choose the right method for specific problems, common aspects of model construction, and the testing of model assumptions through influence and residual analyses. This course is required for students in the Epidemiology and Health Policy tracks of the M.P.H. Program. Prerequisite: Biostatistics I or consent of the instructor. Enrollment is limited due to space restrictions, with priority given to students in the M.P.H. Program.

PUBH 5510. Measurement and Analysis for Healthcare Improvement. This course takes a deep dive into understanding measures commonly used to assess quality in health and healthcare. At the end of the course students will be able to critically assess, analyze, and communicate healthcare data. Required for students in the Epidemiology and Health Policy tracks of the MPH program. Prerequisite: PUBH 5501 Epidemiology I and PUBH 5502 Biostatistics I, or instructor approval.

PUBH 5512. Decision Analysis in Medicine and Public Health. This course provides an overview of qualitative and quantitative decision making with a dominant focus on quantitative techniques, using clinical and economic endpoints and their role in clinical strategies of care and health policy. Topics include: cognitive heuristics, Bayes' theorem, ROC analysis, the study of diagnostic tests, meta-analysis, health states and utility measurement using expected value decision making, decision tree analysis, Markov processes and network simulation modeling, quantitative management of uncertainty, cost theory and accounting, cost-effectiveness and cost-utility analysis.

PUBH 5516. Public Health Practice. Public Health Practice will introduce students to key topics, concepts and methods in Environmental Health and Public Health Surveillance. Basic environmental epidemiology, use of evidence in policy and practice, along with an overview of the main environmental exposures will be explored. This course also examines an overview of public health surveillance as a lens to public health practice, in terms of how public health programs are organized, financed, and operated and what surveillance data are available to inform specific programs. Public health practitioners and policy-makers who plan, implement, and evaluate infectious disease, chronic disease, injury, and disability prevention and control programs have a need for reliable information about the status of these health problems among the populations they serve. Surveillance systems provide information for action. Analyzing, interpreting and using public health surveillance data inform the design, operation, and delivery of public health programs and target public health action and disease control. Public health surveillance is the ongoing process that public health agencies use to collect, manage, analyze, interpret and disseminate this information. We will review basic approaches to public health surveillance, including disease reporting regulations and notifiable diseases, surveillance for infectious diseases, chronic diseases, and adverse events, uses of surveillance data, and how surveillance data can inform public health program, policy, and practice. The course will be taught by a multidisciplinary group of faculty using didactic and interactive elements of instruction.

PUBH 5517. Grant Writing. This course provides a foundation in grant writing for the early career scientist or public health practitioner. It includes seven core sessions, nine elective sessions (from which students must choose at least four), and a mock grant review experience. Core topics include an overview of funding agencies and award mechanisms, as well as how to identify funding opportunities, plan an application, construct an impactful research plan, develop a budget, and succeed at grantsmanship. Elective sessions discuss applying for specific types of grants including career development, global health, health policy, and programmatic awards; VUMC institutional awards and resources; VA grants; NIH biosketch development; research mentorship; and training in the responsible conduct of research. Students will also learn how grants are reviewed and scored, and participate in a mock grant review, choosing either career development award applications or programmatic grants. Enrollment is limited to students in the M.P.H. and M.S.C.I. programs, or by permission of the instructor.

PUBH 5518. Research Ethics. This course presents issues in the responsible conduct of research, including ethics, data management, research fraud, academic misconduct, and conflict of interest. The course covers federal and institutional guidelines regarding research in human and animal subjects. Topics include vulnerable populations in research, confidentiality, and the Institutional Review Board (IRB). The course is required for students in the Epidemiology and Health Policy tracks of the M.P.H. Program. Enrollment is limited to students in the M.P.H. and M.S.C.I. programs, or by permission of the instructor.

PUBH 5520. Introduction to Health Policy. The aim of this course is to provide students with an overview of the U.S. health care system and key features of its financing and delivery. We will discuss the strengths and weaknesses of our health care system, historical trends, and how we compare to other countries. Moreover, we will discuss the major components of the Affordable Care Act and implementation challenges going forward. Drawing on materials from different academic disciplines, including economics, political science, and sociology, the course will place particular emphasis on analytic approaches to evaluate policy impact. The course will address a range of topics, including the structure of the delivery system, drivers of spending growth, quality of care, and long-term care. No disciplinary background is assumed, nor is any special familiarity with the field of health care required. Required for students in the Epidemiology and Health Policy tracks of the MPH program.

PUBH 5521. Survey Research Seminar. This is a didactic and participatory graduate-level class. It is designed to introduce key concepts and skills in survey methodology and the application of those skills to public health research. The course includes content on survey modes, sampling, questionnaire development, and survey implementation. The student will develop a research question, recruitment materials, and a short questionnaire based on the theory and skills learned in the course. This course is required for students in the MPH program.

PUBH 5522. Qualitative Health Research Methods I. This course is designed to provide an introduction to qualitative research methods, with a focus on research in health behavior, health care delivery, and sociocultural norms that impact health and well-being, although these methods can be applied easily to other arenas. The primary skills we will develop include techniques of the case study method including interviews, focus groups, and observation. Introductions to mixed methods will also be included. We will consider strategies for validity and reliability, and the relevance of standard evaluative criteria such as objectivity, neutrality, and generalizability. This course is required for students in the MPH program.

PUBH 5523. Qualitative Health Research Methods II. This course is an extension of the one credit hour Qualitative Health Research Methods I course. During this course, students will pilot, refine, and employ their own qualitative interview guide to collect qualitative data. Students will receive qualitative data analysis training and will undertake to analyze the data from their pilot. The final project will include a write-up of the methods, data analysis, and discussion of findings. This course is an elective for students in the M.P.H. Program. Prerequisite: Qualitative Health Research Methods I.

PUBH 5524. The Science of Health Behavior. This course will provide an overview of social and behavioral science theories that are currently used to (a) understand health behaviors; and (b) guide the development of interventions to prevent, reduce, or eliminate major public health problems. We will also explore how technologies (i.e., patient portals, mobile devices, and the Internet) are used to promote health behaviors, disparities in the performance of health behaviors, and how behavioral interventions attempt to address and reduce these disparities. This course is required for all students in the M.P.H. Program.

PUBH 5525. Health Economics. This course is intended to survey the major topics in Health Economics. Each class is organized around a topical theme: those themes include health reform, health insurance, health promotion and disease prevention, and the health care workforce. Each theme will be approached from an economic perspective using recent articles from the literature. This course is required for students in the Health Policy track of the M.P.H. Program.

PUBH 5526. Global Health Project Development. This course focuses on development of the individual student's MPH practicum and thesis including the identification of a key global health question and design of a suitable project to address the question. Each student will complete a relevant skill-process activity, a draft of his/her practicum agreement, and a project development concept paper. Enrollment is limited to students in the Global Health track of the MPH program.

PUBH 5527. Protocol Development I. This course is designed to prepare students to plan and conduct an independent thesis research project. Students will strengthen their ability to assess whether a research strategy appropriately addresses study questions, with an emphasis on evaluating data sources, study population, measurement, and analysis approach. They will also develop management and logistical skills necessary for conducting public health research. Enrollment is limited to students in M.P.H. Program.

PUBH 5530. Protocol Development II. This course focuses on development of the individual student's research protocol. Each student will present the background, methods, and limitations of their proposed research design in class, and complete the research protocol for the M.P.H. master's thesis. Enrollment is limited to students in the M.P.H. Program.

PUBH 5536. Public Health Practicum. Required as part of the M.P.H. Program, the public health practicum is intended to give students the opportunity to develop practical skills and competencies in public health practice settings.

PUBH 5538. Health Services Administration: Program and Policy Evaluation. This course addresses the evaluation of changes in the health care delivery system, either through programs specifically implemented to achieve such changes or through changes in health care delivery/financing policies. The primary designs—before/after, concurrent/retrospective control, interrupted time-series—and their strengths and limitations. The course includes didactic lectures and small group critical reading/presentation of current program/policy evaluations published in leading medical journals. This course is required for students in the Health Policy track of the M.P.H. Program. Prerequisite: Epidemiology II, Biostatistics II, or approval of instructor.

PUBH 5540. Health Services Administration: Leadership and Management in Global Health. This course introduces students to principles of management and leadership of global health programs and organizations in complex and challenging environments. Students will explore diverse health systems, organizational behavior, health policy, program design, and core management techniques. Required for students in the Global Health track of the M.P.H. Program.

PUBH 5541. Essential Skills in Global Health. This course introduces students to core research, field tools, assessment and implementation

techniques, and evaluation methodologies commonly used in the field of global health. Students explore theories and practices used to analyze issues and intervene in global health and they examine determinants of global health and development from an interdisciplinary vantage point. Health and developmental issues across nations and cultures that require collective, partnership-based action are highlighted. The course is taught by an interdisciplinary team of faculty members using didactic, interactive and practical elements of instruction. This course is required for students in the Global Health track of the M.P.H. program and may be taken as credit toward the Global Health Certificate.

PUBH 5542. Foundations of Global Health. This course introduces students to key topics, concepts and methods in global health, examining determinants of complex issues and multi-dimensional approaches and interventions with a particular emphasis on low-resource settings. Taught by an interdisciplinary team of faculty members, this course uses didactic, interactive and practical elements of instruction to address international and cross-cultural health and developmental issues. At the conclusion of the course, students should be able to discuss major topics in global health and design suitable projects that address global health challenges. This course is required for students in the Global Health track of the MPH program.

PUBH 5549. Case Studies in Tropical Diseases. This course introduces tropical diseases and parasitology in a clinical case study format with student group leadership that is facilitated by faculty with substantial front-line tropical medicine training and experience. Written case protocols will be presented by faculty members and Infectious Disease fellows/ Internal Medicine residents who will lead an interactive discussion involving pathophysiology, clinical presentation, differential diagnosis, diagnosis and treatment. This course may be taken as elective credit toward the M.P.H. degree and the graduate certificate in global health. Summer.

PUBH 5550. Global Health Politics and Policy. Global Health Politics and Policy introduces core global health problems facing the world's populations today and examines the efforts taken to improve health at a global level. It focuses on the social and political movements of global health issues and how these forces create and shape global health policy both in the U.S. and among the G8 nations. This course is required for students in the Global Health track of the Master of Public Health (MPH) program and it may be taken for credit toward the graduate certificate in global health. Spring.

PUBH 5557. Protocol Development for Global Health. This course focuses on development of the individual student's MPH thesis for the Global Health track. Each student will develop the background, methods, and limitations of their proposed research design in class. In addition, the course will include a one-on-one session with Dr. Yuwei Zhu to review the statistical analysis plan for the thesis work. The student's thesis adviser(s) will be invited to participate. This course is required for students in the Global Health track of the MPH Program.

PUBH 5560. Data Science for Learning Health Systems. This course is designed to provide an intuition-based primer in using rapidly growing biomedical data to support continuous learning in healthcare. Students will gain a conceptual overview of the Learning Health System and the infrastructure necessary to support its development. Students will also be exposed to key concepts in data science, 'big data', and the application of a diverse methodologies to improve the quality of healthcare outside of traditional clinical trials and related approaches. No prior experience in data science is necessary, but an introductory statistics course will be helpful.

PUBH 5565. Implementation Science. This course serves as an introduction to the field of dissemination and implementation research. Students will learn the foundations of D&I including its theoretical underpinnings as well as how to design and conduct an implementation study. Additional topics such conducting D&I in community and public health settings, policy settings, and the global context will also be covered.

PUBH 5590. Independent Study. Content varies according to individual needs and interests. A contract is made between the student and the faculty sponsor, with copies for the student, the sponsor, the program director, and the student's record. MPH Program Director approval required.

PUBH 5599. MPH Thesis Research I. The primary objective is the completion of the MPH thesis. Each student will work independently and coordinate research activities with their thesis adviser(s) and thesis readers.

PUBH 7999. MPH Thesis Research II. [Formerly PUBH 5519] In this research seminar required as part of the M.P.H. Program, second-year students present the results of their master's thesis research. Each 40-minute presentation addresses the background and significance, methods, results, and public health/research implications. Presentations are scheduled through the course director on a first come, first served basis. Before presenting their work, students must obtain the approval of their thesis committee.

Applied Clinical Informatics

Courses leading to the Master of Science (Applied Clinical Informatics)

ACI 6110. Introduction to Clinical Informatics. This course provides healthcare professionals with a basic and practical understanding of fundamental concepts in clinical informatics. Topics covered in the course include a history of biomedical informatics, review health information systems, clinical decision support, quality improvement, consumer health, human-system interactions, and others. Completion of this course will lay the groundwork for subsequent deep study of many of the individual topics covered.

ACI 6111. Foundations of Health Information Technology. This course will provide a strong foundation for understanding the current state and key topics in health information technology. Students will begin with a review of computer programs and systems, and then build on top of this framework detailed information on the structure of health care data and the architecture of supporting systems. Data exchange, interoperability and data networks will be covered, along with key concepts for data security and privacy. Students will utilize multiple modalities of digital learning, and will participate in projects at different points during the course. Health information technology skills and knowledge will be assessed incrementally throughout the course.

ACI 6112. The Health System. This introductory course provides a broad overview of actors & organizations comprising our health care systems as well as the the societal and organizational trends facing consumers, clinicians, executives, and policy-makers. It will provide an overview of some of the major characteristics of the American health care system that in turn drive health care delivery and clinical informatics priorities. Topics will include a historical overview of the American Health Care system, health care economics and financing, current regulatory issues, and other factors both influencing current informatics initiatives and suggesting future opportunities for innovative informatics solutions.

ACI 6120. Clinical Decision Support and Evidence-Based Patient Care. This course will focus on the design, implementation, and evaluation of clinical decision support features of clinical information systems. Topics to be addressed include cognitive aspects of human decision making, decision science, knowledge management, workflow, evidencebased patient care, and facilitated information retrieval. Many existing CDS examples will be reviewed and evaluated and students will be expected to design a novel CDS as part of their final project.

ACI 6121. Clinical Information System and Applications. The digitization of healthcare data and delivery of care functionality has been occurring on the small scale for nearly 50 years in clinical information systems. Clinical information systems are comprised of multiple components that comprise clinical information. Beginning in the 1990s, electronic health record (EHR) systems began to emerge as a foundational tool for clinical information systems that brought together various aspects of healthcare such as billing, documentation, and order entry. By the mid-2000s the basic underpinnings of a comprehensive EHR were understood, but uptake was still very low. This situation changed fundamentally over the past decade and EHRs and related clinical information systems are now ubiquitous. The goal of this course is to provide a framework to understand the underpinnings of modern clinical information systems and the integration of these systems that enable their basic and extended functionalities. Furthermore, with healthcare consumers having more opportunities to be involved with their health information, we will explore the evolution of consumer informatics. Finally, we will discuss emerging trends in the digitization of healthcare data including mobile health, telemedicine, and voice technologies.

ACI 6122. Workflow, User-Centered Design, and Implementation. The course will cover three main topic areas: workflow, user-centered design, and implementation. Each topic area will include three course segments: principles, methods, and applications. In the principles section for each topic, the course will clearly define terminology related to the topic area (e.g., What is workflow?), review how key concepts relate to each other (e.g., relationship between human factors engineering and human-computer interaction), and examine the relevance of the topic area in Applied Clinical Informatics. The methodology section for each topic will address qualitative, quantitative, and computational methods used for the design, implementation, and evaluation of health information technology. The applications section for each topic will use case studies based in the topic area to examine the real world application of principles and methods. The course will cover a wide range of contexts, from homes/communities to organizations to a broader regional scale.

ACI 6130. Data to Knowledge (Clinical Data Standards). This course introduces students to fundamental principles about terminologies and data standards and their importance in interoperability and health information exchange. It will focus on clinical data standards with respect to syntactic and semantic interoperability by covering data exchange and messaging standards (e.g., HL7), clinical terminology standards (e.g., SNOMED), document standards (e.g., HL7 CDA).

ACI 6131. Clinical Information System Lifecycle. This course will cover all aspects of designing, implementing and supporting systems. The course will be taught with reference to both the System Development Life Oycle (SDLO) and Information Lifecycle Management (ILM) frameworks. Areas covered will include project conceptualization, methods for requirements gathering, risk analysis and mitigation, total cost of ownership, and implementation and support. Planning and management of disaster recovery and business continuity will also be covered, as well as methods of evaluating effectiveness and return on investment.

ACI 6132. Management and Organizational Change. This course will focus on the management skills needed to direct the informatics activities of large organizations, and to lead changes in technology that may be disruptive. As part of the course curriculum, students will learn leadership models, processes, and practices, effective interdisciplinary communication and team formation, project management, and strategic and financial planning for new clinical information systems.

ACI 7110. Practicum Experience. This course will arrange for students to rotate through health IT operational teams based on their interests and team availability. As part of being embedded in an IT operation, students will be expected to complete limited assignments to advance the team agenda.

ACI 7111. Capstone Project Planning. Students will begin the process of planning for their second year Capstone project beginning with a faculty mentor selection, needs assessment and design phase leading up to a formal project proposal and submission of development specifications at the conclusion of the second semester. Project plans will be formally evaluated and will require approval prior to proceeding to implementation and evaluation.

ACI 7120. Practicum Experience. This course will arrange for students to rotate through health IT operational teams based on their interests and team availability. As part of being embedded in an IT operation, students will be expected to complete limited assignments to advance the team agenda.

ACI 7121. Capstone Project Planning. Students will continue the process of planning for their second year Capstone project. Project plans will be formally evaluated and will require approval prior to proceeding to implementation and evaluation.

ACI 7210. Practicum Experience. This course will arrange for students to rotate through health IT operational teams based on their interests and team availability. As part of being embedded in an IT operation, students

will be expected to complete limited assignments to advance the team agenda.

ACI 7211. Capstone Project Implementation and Evaluations. Based on an approved project plan from the first year, students will implement and evaluate a Capstone project in conjunction with a clinical informatics operations team at their home institution. The Capstone Project is designed to provide students with knowledge and skills required to design and conduct applied research studies to evaluate the efficacy of informatics applications in the clinical environment. Based on personal career objectives and informatics challenges that they identify in practicum course, the capstone project will have the flexibility to be completed as a group or individually. Each student will have a faculty mentor and, if applicable, a practice mentor within the student's home department/organization.

ACI 7220. Practicum Experience. This course will arrange for students to rotate through health IT operational teams based on their interests and team availability. As part of being embedded in an IT operation, students will be expected to complete limited assignments to advance the team agenda.

ACI 7221. Capstone Project Implementation and Evaluations. Based on an approved project plan from the first year, students will implement and evaluate a Capstone project in conjunction with a clinical informatics operations team at their home institution. The Capstone Project is designed to provide students with knowledge and skills required to design and conduct applied research studies to evaluate the efficacy of informatics applications in the clinical environment. Based on personal career objectives and informatics challenges that they identify in practicum course, the capstone project will have the flexibility to be completed as a group or individually. Each student will have a faculty mentor and, if applicable, a practice mentor within the student's home department/organization.

Genetic Counseling

GC 6010. Introduction to Genetic Counseling. The first half of this course will introduce the student to the framework of the genetic counseling profession, including the history, practice standards, principles, and code of ethics. The second half of this course will introduce the application of the genetic counseling framework via the client-provider relationship (defining and describing the qualities of the genetic counseling interaction) and various counseling theories. We will draw on the Reciprocal Engagement Model of genetic counseling to discuss the therapeutic approach, contracting, basic empathic interviewing, and client assessment. Other theories that will be discussed in depth include: cognitive behavioral theory, family systems theory, feminist theory, multicultural counseling, existential therapy, and person-centered therapy.

GC 6015. Theories of Human Experience. This course guides students through theory and literature to support understanding of health-related behaviors and the human experience of grief and loss. Topics include health behavior and human motivation, stress and coping theory, adaptation theory and grief theories, as well as theories to provide context into families and culture. The theories and frameworks covered in this course will support the students education in theory-based research as well as provide context and specificity to the delivery of evidence-based genetic counseling interventions. Prerequisite: GC6010.

GC 6020. Applied Genetic Counseling Theory. This course augments clinical rotations during the summer between the first and second years of the Master's degree program. Students will identify psychotherapeutic and educational issues in cases from their clinical rotations. These issues will be addressed through group discussion and practice of counseling approaches and interventions. Students will also build on their clinical skills of how to approach and work-up genetic counseling cases. Pre-requsite: GC6015

GC 6030. Advanced Genetic Counseling. This skills-based, interactive, class will utilize standardized patients, role play, and discussion to practice advanced genetic counseling techniques. This course will encourage exploration of techniques grounded in counseling theory to gain confidence in the counseling process, including dynamics of grief and bereavement, crisis intervention, and multicultural sensitivity. Students will develop a sophisticated understanding of content and process and will be able to formulate a comprehensive biopsychosocial assessment and counseling approach. This class will be interactive with minimal lecture time. Prerequsite: GC6015

GC 6500. Human Development. This course will use a systems-based approach to familiarize the students with human developmental biology and embryology. Students will use this knowledge to understand common human malformations and genetic syndromes. The course will include lectures and case-based learning activities focusing on human reproduction and pre- and postnatal development.

GC 6510. Medical Genetics 1. The purpose of this course is to provide a framework for the study of human genetics with clinical examples to illustrate the application of the main principles. Topics covered this semester will include: gene structure and function, chromosomal abnormalities, single gene inheritance, molecular, cellular and biochemical basis of genetic disease, complex and multifactorial inheritance, genetic diversity, and population genetics. Techniques of genetic analysis will be introduced.

GC 6520. Laboratory Sciences in Medical Genetics. Exposure to the clinical laboratory including ordering, lab utilization management, techniques, and reporting in the areas of molecular genetics, cytogenetics, biochemical genetics, genomics, personalized medicine, pharmacogenetics, genetic tumor screening will be provided. There will be extensive review of gene variant analysis and reporting for clinical relevancy.

GC 6610. Rsrch for Genetic Counselors 1. Research for Genetic Counselors I & II will explore the research process, with a focus on genetic counseling research. The course will introduce the skills students will need to develop a thesis proposal and complete their thesis research. This course implements application of research components and will be heavily discussion based. Each student will identify and develop his or her thesis proposal throughout this two semester course. As topics are discussed in class, students will apply knowledge to those aspects of the development of their theses. This will culminate in the presentation of their thesis proposals to the committee at the end of the second semester. Topics addressed during the first semester will include: basic principles of study design, critical reading of the literature, and developing a statistical plan.

GC 6615. Rsrch for Genetic Counselors 2. Research for Genetic Counselors 2 will explore the research process, with a focus on genetic counseling research. The course will introduce the skills students will need to develop a thesis proposal and complete their thesis research. This course implements application of research components and will be heavily discussion based. Each student will identify and develop his or her thesis proposal throughout this two semester course. As topics are discussed in class, students will apply knowledge to those aspects of the development of their theses. This will culminate in the presentation of their thesis proposals to the committee at the end of the second semester. Topics addressed during the first semester will include: quantitative and qualitative research methods, collection and management of data, human subjects research and the IRB, the informed consent process, and research ethics. Prerequsite: 6610

GC 7000. Genomics in Public Health. Genomics in Public Health will focus on demonstrating the use of epidemiology and population-based screening to create health policy. Exploration of how genetic counselors can use their clinical and research skills to critically review the impact of health policy will be covered, especially as it relates to healthcare delivery and access, and patient and provider education. The importance of metrics and the use of community, regional, and national health resources will be emphasized. This course will review health policy and legislation which relate to medical genetics.

GC 7010. Professional Issues 1. This course will focus on professional development for new genetic counselors. Topics are organized into sections and will address skills needed to secure employment, function as a genetic counselor in both clinical and non-clinical settings, and management demands of working in a helping profession. Content addressed will include CV and cover letter development, job searching and negotiation techniques, financial and reimbursement issues, and expanding roles for genetic counselors, professional conduct, leadership skills, professional development and mentorship and self care techniques.

GC 7015. Professional Issues 2. This course will explore in more depth the role of genetic counselors in research, education, and leadership. Topics include research funding, grant writing, working in a research team, conflicts of interest, supervision skills, genetic counseling outcome research and preparing for board examination and obtaining licensure. Students will participate in group activities, professional panel discussions, and interactive role plays. Prerequsite: GC7010

GC 7500. Topics in Clinical Genetics. Students, faculty, and guests participate in the presentation and critical review of current and emerging topics and interests in the field of human genetics and genetic counseling. Students will develop skills in critical evaluation of medical literature, assessment of emerging interests and topics, and presentation of original research.

GC 7510. Genetc Counselng Pre-Practicum. This course will allow students the opportunity to practice genetic counseling skills (listening and reflecting techniques, empathy, medical history taking, pedigree construction, patient education) which are presented in Introduction to Genetic Counseling (GC7500). The course is designed to be practice-oriented, and it will provide a safe place to explore new skills. Experience-based learning using standardized patients to practice medical communication techniques, roleplay, and flipped classroom strategies will be employed. The RIME (Reporter, Interpreter, Manager, Educator) framework will be introduced as a competency-based assessment tool to set expectations for assessing the progress of student performance throughout their clinical training. As part of this course students will attend a weekly case conference with colleagues in which cases will be presented and discussed.

GC 7515. Genetic Counseling Practicum 1. Genetic Counseling Practicum 1 is part of a Genetic Counseling Practicum series that provides students the opportunity to integrate knowledge, skills and attitudes (KSA's) of genetic counseling in a clinical setting. Within the RIME framework the goal of this course is to consistently demonstrate the reporter level skills learned from their Pre-Practicum Course (GC7510), and integrate skills from the interpreter level at least 50% of the time. As part of this course students will attend a weekly case conference with colleagues in which cases will be presented and discussed. Prerequisite: GC7510

GC 7520. Genetic Counseling Practicum 2. Genetic Counseling Practicum 2 is part of a Genetic Counseling Practicum series that provides students the opportunity to integrate knowledge, skills and attitudes (KSA's) of genetic counseling in a clinical setting. This series utilizes the RIME framework (Reporter, Interpreter, Manager, Educator), which is a framework used frequently in medical education to set expectations for student performance throughout their clinical training. The goal of this course is to consistently demonstrate the reporter and interpreter level skills learned and applied in the prerequisite courses. As part of this course students will attend a weekly case conference with colleagues in which cases will be presented and discussed. Prerequisite: GC7515

GC 7525. Genetic Counseling Practicum 3. Genetic Counseling Practicum 3 is part of a Genetic Counseling Practicum series that provides students the opportunity to integrate knowledge, skills and attitudes (KSA's) of genetic counseling in a clinical setting. This series utilizes the RIME framework (Reporter, Interpreter, Manager, Educator), which is a framework used frequently in medical education to set expectations for student performance throughout their clinical training. The goal of this course is to consistently demonstrate the reporter and interpreter level skills learned from their previous clinical experiences, and integrate skills from the manager level at least 50% of the time. As part of this course students will attend a weekly case conference with colleagues in which cases will be presented and discussed. Prerequisite: GC7520

GC 7530. Genetic Counseling Practicum 4. Genetic Counseling Practicum 4 is the last part of a Genetic Counseling Practicum series that provides students the opportunity to integrate knowledge, skills and attitudes (KSA's) of genetic counseling in a clinical setting. This series utilizes the RIME framework (Reporter, Interpreter, Manager, Educator), which is a framework used frequently in medical education to set expectations for student performance throughout their clinical training. The goal of this course is to consistently demonstrate the reporter, interpreter and manager level skills learned from their previous clinical experiences (GC7510,

GC7515, GC7520, GC7525), and integrate skills from the educator level at least 50% of the time. As part of this course students will attend a weekly case conference with colleagues in which cases will be presented and discussed. Prerequisite: GC7525

GC 7600. Clinical Reflection and Self-Awareness. First year M.G.C. students will meet as a group in the Fall and Spring semesters for group supervision. The weekly one-hour sessions will be moderated by a counseling professional who is independent of the M.G.C. program. Transition to more peer-directed conversations will be encouraged as students advance through the program. Some of the topics to be covered include: self-awareness, self-care and coping skills, setting boundaries and life transitions. Sessions will be confidential and attendance will be the only requirement for this pass/fail class.

GC 7610. Clinical Reflection and Self-Awareness. Second year M.G.C. students will meet as a group in the Fall and Spring semesters for group supervision. The weekly one-hour sessions will be moderated by a counseling professional who is independent of the M.G.C. program. Transition to more peer-directed conversations will be encouraged as students advance through the program. Skills introduced in GC 7600 will be practices and layered with topics of life management through self-care, professional burnout in a helping profession, understanding one's role in the healthcare team and finding a professional self. Sessions will be confidential and attendance will be the only requirement for this pass/fail class. Prerequisite: GC 7600

GC 7999. Genetic Counseling Master's Thesis. Completion of a mentored research project is a required component of the MGC program. The research project is driven by the interests of the individual student supported by the program faculty and/or clinical supervisors. The research must focus on a question related to the practice of genetic counseling from the patient and/or provider perspective. This course is graded pass/fail.

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 B.S. (College of New Jersey 2007); M.D. (Virginia Commonwealth 2011) [2018] CATHERINE SIPE BOTTOMS, Clinical Professor of Pediatrics B.S. (Duke 1997); M.D. (Wake Forest 2002) [2005] SADIQA BOURA, Instructor in Clinical Medicine; Instructor in Clinical Pediatrics B.S. (American 2009); M.D. (University of Medicine and Health Sciences 2015) [2019] LANA JERADEH BOURSOULIAN, Assistant Professor of Clinical Neurology; Assistant Professor of Olinical Pediatrics M.D. (Damascus [Syria] 2002) [2012] 	B.A (Cal B.S [199 MARQ Rac B.S Univ ASHLE Stra Adm
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2014) [2017]	
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Ph.D. (Tennessee, Nashville 2003); M.D. (UT Health Science Center	LA
[Tennessee] 2005) [2011] CHARLES D. CLARKE, Assistant Professor of Clinical Neurology	СН
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Physiology & Biophysics B.S. (Alabama, Huntsville 2004); Ph.D. (Vanderbilt 2010) [2014]	RO
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[2004]	ΠŪ
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B.A., B.M. (Mississippi 1964, 1969); M.M., Ph.D. (Southern California 1970, 1976) [1991]	RO
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B.A., B.S. (North Carolina 2001, 2001); M.D. (Texas 2005) [2017]	~~~
DAVID E. CLIFFEL, Cornelius Vanderbilt Chair; Professor of Chemistry; Associate Professor of Pediatrics; Chair, Department of Chemistry	CO
B.E.E., B.S. (Dayton 1988, 1988); Ph.D. (Texas 1998) [2000]	DA
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B.S. (Stanford 2000); M.D. (Tulane 2006) [2013] BRIAN JAY GELFAND, Associate Professor of Anesthesiology; Associate	Ph.D. (Co LYNETTE A.
Professor of Surgery	B.A. (Buc
B.A. (Adelphi 1986); M.S., M.D. (Chicago Medical School 1988, 1991)	MARY JO ST
[2016]	Pediatrics
LAN LIN GELLERT, Assistant Professor of Pathology, Microbiology and	B.S.N. (M
Immunology	M.B.A. (C
M.D. (Peking Union Medical [China] 1999); Ph.D. (Johns Hopkins	(North Ca
2005) [2012]	LAUREN L. (
NAN GENTRY, Associate in Obstetrics & Gynecology	B.S. (Lips
B.S. (Kentucky, Lexington 2003); M.S.N. (Vanderbilt 2006) [2012] RICHARD H. GENTZLER, Assistant Clinical Professor of Oral and	2011) [20 MARY KATH
Maxillofacial Surgery	Surgery
B.S. (Austin Peay State 1998); D.D.S. (Tennessee 2001) [2006]	B.S. (Bos
IVELIN S. GEORGIEV, Associate Professor of Pathology, Microbiology	1989) [200
and Immunology; Associate Professor of Computer Science	AYUSH GIRI,
B.S. (Eckerd 2004); Ph.D. (Duke 2009) [2015]	Professor
ARIANA BECK GEROMES, Assistant Professor of Clinical Pathology,	B.A. (Kno
Microbiology and Immunology	2015) [20
B.S. (Vanderbilt 2007); M.D. (Louisiana State, New Orleans 2012) [2018]	DARIO A. GI
SABINA B. GESELL, Adjunct Assistant Professor of Pediatrics	Ph.D., M.
B.A. (Vassar 1993); M.A., Ph.D. (Notre Dame 1997, 1999) [2008]	NUNZIA B. O
B.A. (Vassar 1993); M.A., Ph.D. (Notre Dame 1997, 1999) [2008] LESLIE STUART GEWIN, Assistant Professor of Medicine; Assistant	NUNZIA B. O Medicine;
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 B.A. (Vassar 1993); M.A., Ph.D. (Notre Dame 1997, 1999) [2008] LESLIE STUART GEWIN, Assistant Professor of Medicine; Assistant Professor of Cell and Developmental Biology B.A. (Princeton 1997); M.D. (Alabarna, Birmingham 2002) [2009] MUTEEB GHAFFAR, Assistant Professor of Clinical Medicine; Assistant Professor of Clinical Pediatrics M.D. (University of Seychelles - American Institute of Medicine 2010); M.H.A. (Western Kentucky 2013) [2018] MASOUD GHAMARI-LANGROUDI, Research Assistant Professor of Molecular Physiology and Biophysics M.D. (Shiraz [Iran] 1991); Ph.D. (McGill [Canada] 2001) [2011] GIOVANNA A. GIANNICO, Associate Professor of Pathology, Microbiology and Immunology M.D. (Bari [Italy] 1996) [2010] JAYME C. GIBSON, Assistant in Anesthesiology B.S. (Murray State 2002); M.S.N. (Vanderbilt 2007) [2010] LISA DAWN GIBSON, Instructor in Clinical Pediatrics B.S. (Rhodes College 1991); M.D. (UT Health Science Center [Tennessee] 1995) [2017] MICHAEL K. GIBSON, Associate Professor of Medicine B.S. (North Carolina State 1991); M.D., Ph.D. (Johns Hopkins 1996, 	NUNZIA B. G Medicine; M.D. (Bre KEVIN BARF B.A. (Midu [2019] MARK DENN B.A. (Emo KIMBERLY F B.S. (Jam Ph.D. (Va SUZANNE E B.A. (Rho JOCELYN D/ B.S.N. (Ar JOSEFINA D M.D., B.S GLENN T. G Informatic D.V.M. (FI Francisco
 B.A. (Vassar 1993); M.A., Ph.D. (Notre Dame 1997, 1999) [2008] LESLIE STUART GEWIN, Assistant Professor of Medicine; Assistant Professor of Cell and Developmental Biology B.A. (Princeton 1997); M.D. (Alabarna, Birmingham 2002) [2009] MUTEEB GHAFFAR, Assistant Professor of Clinical Medicine; Assistant Professor of Clinical Pediatrics M.D. (University of Seychelles - American Institute of Medicine 2010); M.H.A. (Western Kentucky 2013) [2018] MASOUD GHAMARI-LANGROUDI, Research Assistant Professor of Molecular Physiology and Biophysics M.D. (Shiraz [Iran] 1991); Ph.D. (McGill [Canada] 2001) [2011] GIOVANNA A. GIANNICO, Associate Professor of Pathology, Microbiology and Immunology M.D. (Bari [Italy] 1996) [2010] JAYME C. GIBSON, Assistant in Anesthesiology B.S. (Murray State 2002); M.S.N. (Vanderbilt 2007) [2010] LISA DAWN GIBSON, Instructor in Clinical Pediatrics B.S. (Rhodes College 1991); M.D. (UT Health Science Center [Tennessee] 1995) [2017] MICHAEL K. GIBSON, Associate Professor of Medicine B.S. (North Carolina State 1991); M.D., Ph.D. (Johns Hopkins 1996, 2010) [2017] 	NUNZIA B. G Medicine; M.D. (Bre KEVIN BARF B.A. (Midu [2019] MARK DENN B.A. (Emo KIMBERLY F B.S. (Jam Ph.D. (Va SUZANNE E B.A. (Rho JOCELYN D/ B.S.N. (Ar JOSEFINA D M.D., B.S GLENN T. G Informatic D.V.M. (FI Francisco ALAIN P. GC
 B.A. (Vassar 1993); M.A., Ph.D. (Notre Dame 1997, 1999) [2008] LESLIE STUART GEWIN, Assistant Professor of Medicine; Assistant Professor of Cell and Developmental Biology B.A. (Princeton 1997); M.D. (Alabarna, Birmingham 2002) [2009] MUTEEB GHAFFAR, Assistant Professor of Clinical Medicine; Assistant Professor of Clinical Pediatrics M.D. (University of Seychelles - American Institute of Medicine 2010); M.H.A. (Western Kentucky 2013) [2018] MASOUD GHAMARI-LANGROUDI, Research Assistant Professor of Molecular Physiology and Biophysics M.D. (Shiraz [Iran] 1991); Ph.D. (McGill [Canada] 2001) [2011] GIOVANNA A. GIANNICO, Associate Professor of Pathology, Microbiology and Immunology M.D. (Bari [Italy] 1996) [2010] JAYME C. GIBSON, Assistant in Anesthesiology B.S. (Murray State 2002); M.S.N. (Vanderbilt 2007) [2010] LISA DAWN GIBSON, Instructor in Clinical Pediatrics B.S. (Rhodes College 1991); M.D. (UT Health Science Center [Tennessee] 1995) [2017] MICHAEL K. GIBSON, Associate Professor of Medicine B.S. (North Carolina State 1991); M.D., Ph.D. (Johns Hopkins 1996, 2010) [2017] MICHELE R. GIBSON-O'GRADY, Assistant in Obstetrics & Gynecology 	NUNZIA B. G Medicine; M.D. (Bre KEVIN BARF B.A. (Midu [2019] MARK DENN B.A. (Emo KIMBERLY F B.S. (Jam Ph.D. (Va SUZANNE E B.A. (Rho JOCELYN D/ B.S.N. (Ar JOSEFINA D M.D., B.S GLENN T. G Informatic D.V.M. (FI Francisco ALAIN P. GC M.S. (Bor
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 B.A. (Vassar 1993); M.A., Ph.D. (Notre Dame 1997, 1999) [2008] LESLIE STUART GEWIN, Assistant Professor of Medicine; Assistant Professor of Cell and Developmental Biology B.A. (Princeton 1997); M.D. (Alabarna, Birmingham 2002) [2009] MUTEEB GHAFFAR, Assistant Professor of Clinical Medicine; Assistant Professor of Clinical Pediatrics M.D. (University of Seychelles - American Institute of Medicine 2010); M.H.A. (Western Kentucky 2013) [2018] MASOUD GHAMARI-LANGROUDI, Research Assistant Professor of Molecular Physiology and Biophysics M.D. (Shiraz [Iran] 1991); Ph.D. (McGill [Canada] 2001) [2011] GIOVANNA A. GIANNICO, Associate Professor of Pathology, Microbiology and Immunology M.D. (Bari [Italy] 1996) [2010] JAYME C. GIBSON, Assistant in Anesthesiology B.S. (Murray State 2002); M.S.N. (Vanderbilt 2007) [2010] LISA DAWN GIBSON, Instructor in Clinical Pediatrics B.S. (Rhodes College 1991); M.D. (UT Health Science Center [Tennessee] 1995) [2017] MICHAEL K. GIBSON, Associate Professor of Medicine B.S. (North Carolina State 1991); M.D., Ph.D. (Johns Hopkins 1996, 2010) [2017] MICHELE R. GIBSON-O'GRADY, Assistant in Obstetrics & Gynecology B.A. (California, Santa Cruz 1980); B.S.N. (San Diego State 1987); M.S.N. (Frontier Nursing University 2009) [2018] 	NUNZIA B. G Medicine; M.D. (Bre KEVIN BARF B.A. (Mida [2019] MARK DENN B.A. (Emo KIMBERLY F B.S. (Jam Ph.D. (Va SUZANNE E B.A. (Rho JOCELYN D/ B.S.N. (Ar JOSEFINA D M.D., B.S GLENN T. G Informatic D.V.M. (FI Francisco ALAIN P. GC M.S. (Bor Ph.D. (Bo DANIEL F. G
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 MICHAEL G. TRAMONTANA, Associate Professor of Psychiatry and Behavioral Sciences; Associate Professor of Neurology; Associate Professor of Pediatrics B.S. (Fordham 1971); M.A. (Columbia 1973); Ph.D. (Washington University 1977) [1989] UYEN L. TRAN, Associate Professor of Clinical Ophthalmology and Visual Sciences B.A. (Catholic University of America 1992); M.D. (Medical College of Virginia 1997) [2001] LINDSAY GEBHART TRANTUM, Assistant in Anesthesiology B.A. (Tennessee 2005); M.S.N. (Vanderbilt 2007) [2009] DAVID B. TRENNER, Senior Associate in Orthopaedic Surgery and Rehabilitation 	 MD IMAM UDDIN, Assistant Professor of Ophthalmology & Visual Sciences B.S., M.S. (Jahangirnagar [Bangladesh] 2000, 2002); Ph.D. (Kochi University 2008) [2015] MD. JASHIM UDDIN, Research Associate Professor of Biochemistry B.S., M.S. (Dhaka [Bangladesh] 1991, 1993); Ph.D. (Shinshu [Japan] 2001) [2005] FLORA A. M. UKOLI, Adjunct Professor of Medicine M.B.B.S. (Ibadan [Nigeria] 1975); D.P.H. (Glasgow [U.K.] 1980); M.P.H. (Pittsburgh 1998) [2006] SHERLYN PEROLINA UMAYAM, Assistant in Medicine B.S.N. (Cumberland 2010); M.S.N. (Vanderbilt 2017) [2017] EBELE UMEUKEJE, Assistant Professor of Medicine
 MICHAEL G. TRAMONTANA, Associate Professor of Psychiatry and Behavioral Sciences; Associate Professor of Neurology; Associate Professor of Pediatrics B.S. (Fordham 1971); M.A. (Columbia 1973); Ph.D. (Washington University 1977) [1989] UYEN L. TRAN, Associate Professor of Clinical Ophthalmology and Visual Sciences B.A. (Catholic University of America 1992); M.D. (Medical College of Virginia 1997) [2001] LINDSAY GEBHART TRANTUM, Assistant in Anesthesiology B.A. (Tennessee 2005); M.S.N. (Vanderbilt 2007) [2009] DAVID B. TRENNER, Senior Associate in Orthopaedic Surgery and Rehabilitation B.S. (Portland State 1986); D.P.M. (California College of Podiatric 	 MD IMAM UDDIN, Assistant Professor of Ophthalmology & Visual Sciences B.S., M.S. (Jahangirnagar [Bangladesh] 2000, 2002); Ph.D. (Kochi University 2008) [2015] MD. JASHIM UDDIN, Research Associate Professor of Biochemistry B.S., M.S. (Dhaka [Bangladesh] 1991, 1993); Ph.D. (Shinshu [Japan] 2001) [2005] FLORA A. M. UKOLI, Adjunct Professor of Medicine M.B.B.S. (Ibadan [Nigeria] 1975); D.P.H. (Glasgow [U.K.] 1980); M.P.H. (Pittsburgh 1998) [2006] SHERLYN PEROLINA UMAYAM, Assistant in Medicine B.S.N. (Cumberland 2010); M.S.N. (Vanderbilt 2017) [2017] EBELE UMEUKEJE, Assistant Professor of Medicine M.D. (Nigeria 2003); M.P.H. (Vanderbilt 2015) [2014]
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	FIONA E. YULL, Associate Professor of Obstetrics & Gynecology;
JOHN E. YEZERSKI, Assistant Clinical Professor of Oral and Maxillofacial	
Surgery	Associate Professor of Pharmacology
B.S. (Samford 2002); D.M.D. (Kentucky, Lexington 2006) [2009]	B.Sc. (St Andrews [U.K.] 1985); D.Phil. (Oxford [U.K.] 1989) [1998]
ZAHRA SHAJANI YI, Assistant Professor of Pathology, Microbiology and	AMANDA C. YUNKER, Associate Professor of Obstetrics and Gynecology
Immunology	B.S. (Texas Christian 1999); D.O. (North Texas 2004); M.S. (North
B.S. (British Columbia [Canada] 2000); Ph.D. (University of	Carolina 2010) [2010]
Washington 2007) [2017]	OVEDA CADIA ZAIDI. Assistant Dusfassan of Masisian
	SYEDA SADIA ZAIDI, Assistant Professor of Medicine
MAAME YAA A. B. YIADOM, Assistant Professor of Emergency Medicine	SYEDA SADIA ZAIDI, Assistant Professor of Medicine M.B.B.S. (Dow Medical [Pakistan] 2002) [2012]
MAAME YAA A. B. YIADOM, Assistant Professor of Emergency Medicine A.B. (Princeton 2000); M.P.H. (Harvard 2006); M.D. (Robert Wood	M.B.B.S. (Dow Medical [Pakistan] 2002) [2012] OLAMIDE ZAKA, Assistant Professor of Clinical Medicine
MAAME YAA A. B. YIADOM, Assistant Professor of Emergency Medicine A.B. (Princeton 2000); M.P.H. (Harvard 2006); M.D. (Robert Wood Johnson Medical, New Brunswick 2007); M.S.C.I. (Vanderbilt 2018)	M.B.B.S. (Dow Medical [Pakistan] 2002) [2012] OLAMIDE ZAKA, Assistant Professor of Clinical Medicine B.S. (Georgia 2006); M.D. (Wisconsin 2010) [2013]
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 MAAME YAA A. B. YIADOM, Assistant Professor of Emergency Medicine A.B. (Princeton 2000); M.P.H. (Harvard 2006); M.D. (Robert Wood Johnson Medical, New Brunswick 2007); M.S.C.I. (Vanderbilt 2018) [2014] ZHIJUN YIN, Assistant Professor of Biomedical Informatics B.E., M.E. (Beijing University of Posts and Telecommunications [China] 2009, 2012); M.S., Ph.D. (Vanderbilt 2017, 2018) [2018] CHRISTINA YNARES, Assistant Clinical Professor of Medicine B.S., M.D. (Philippines 1968, 1972) [1981] ADAM DOUGLAS YOCK, Assistant Professor of Radiation Oncology B.A. (Harvard 2008); Ph.D. (Texas, Houston 2014) [2016] PAUL J. YODER, Professor of Special Education, Emeritus; Research Professor of Hearing and Speech Sciences B.S. (Louisiana State 1978); M.S. (Peabody 1979); Ph.D. (North Carolina 1985) [1986] TADAYUKI YONEYAMA, Associate Clinical Professor of Pediatrics 	 M.B.B.S. (Dow Medical [Pakistan] 2002) [2012] OLAMIDE ZAKA, Assistant Professor of Clinical Medicine B.S. (Georgia 2006); M.D. (Wisconsin 2010) [2013] ARWA W. ZAKARIA, Assistant Professor of Clinical Medicine B.S. (Tennessee 2009); D.O. (Lincoln Memorial 2014) [2019] SANDIP K. ZALAWADIYA, Assistant Professor of Medicine M.B.B.S. (Smt. NHL Municipal Medical College - [India] 2006) [2016] DAVID HAROLD ZALD, Corenelius Vanderbilt Chair; Professor of Psychology; Professor of Psychiatry and Behavioral Sciences; Director of Neuroscience B.A. (Michigan 1989); Ph.D. (Minnesota 1997) [2000] RICHARD M. ZANER, Professor of Medicine (Medical Ethics), Emeritus B.S. (Houston 1957); M.A., Ph.D. (New School for Social Research 1959, 1961) [1981] MARIJA ZANIC, Assistant Professor of Cell and Developmental Biology; Assistant Professor of Biochemistry; Assistant Professor of Chemical
 MAAME YAA A. B. YIADOM, Assistant Professor of Emergency Medicine A.B. (Princeton 2000); M.P.H. (Harvard 2006); M.D. (Robert Wood Johnson Medical, New Brunswick 2007); M.S.C.I. (Vanderbilt 2018) [2014] ZHIJUN YIN, Assistant Professor of Biomedical Informatics B.E., M.E. (Beijing University of Posts and Telecommunications [China] 2009, 2012); M.S., Ph.D. (Vanderbilt 2017, 2018) [2018] CHRISTINA YNARES, Assistant Clinical Professor of Medicine B.S., M.D. (Philippines 1968, 1972) [1981] ADAM DOUGLAS YOCK, Assistant Professor of Radiation Oncology B.A. (Harvard 2008); Ph.D. (Texas, Houston 2014) [2016] PAUL J. YODER, Professor of Special Education, Emeritus; Research Professor of Hearing and Speech Sciences B.S. (Louisiana State 1978); M.S. (Peabody 1979); Ph.D. (North Carolina 1985) [1986] TADAYUKI YONEYAMA, Associate Clinical Professor of Pediatrics B.S. (Duke 1990); M.D. (Medical College of Virginia 1994) [1998] 	 M.B.B.S. (Dow Medical [Pakistan] 2002) [2012] OLAMIDE ZAKA, Assistant Professor of Clinical Medicine B.S. (Georgia 2006); M.D. (Wisconsin 2010) [2013] ARWA W. ZAKARIA, Assistant Professor of Clinical Medicine B.S. (Tennessee 2009); D.O. (Lincoln Memorial 2014) [2019] SANDIP K. ZALAWADIYA, Assistant Professor of Medicine M.B.B.S. (Smt. NHL Municipal Medical College - [India] 2006) [2016] DAVID HAROLD ZALD, Corenelius Vanderbilt Chair; Professor of Psychology; Professor of Psychiatry and Behavioral Sciences; Director of Neuroscience B.A. (Michigan 1989); Ph.D. (Minnesota 1997) [2000] RICHARD M. ZANER, Professor of Medicine (Medical Ethics), Emeritus B.S. (Houston 1957); M.A., Ph.D. (New School for Social Research 1959, 1961) [1981] MARIJA ZANIC, Assistant Professor of Cell and Developmental Biology; Assistant Professor of Biochemistry; Assistant Professor of Chemical and Biomolecular Engineering
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