

Vanderbilt University 2013/2014

> Containing general information and courses of study for the 2013/2014 session corrected to August 2013 Nashville

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# Contents

Calendar	4
Administration	5
Medical Center Overview	13
Life at Vanderbilt	18
Medical Education at Vanderbilt	25
Admission	33
Academic Program and Policies	40
Honors and Awards	59
Financial Information	61
Courses of Study	69
Faculty	111
Index  Archived School  Archived Call  Archived Cal	198

### School of Medicine Calendar 2013/2014

#### FALL SEMESTER 2013

Classes begin for 2nd-year MD students / Monday 24 June

Classes begin for 3rd-year MD students / Monday 24 June

Classes begin for 4th-year MD students / Monday 8 July

Orientation/Registration for 1st-year MD students / Wednesday 17 July-Friday 19 July

Classes begin for 1st-year MD students / Monday 22 July

Fall semester begins for medical master's and other doctoral programs / Wednesday 21 August

Labor Day-No MD class or clinical activities / Monday 2 September

Fall break for 2nd-year medical students / Saturday 7 September to Sunday 15 September

Fall break for medical master's and other doctoral programs / Thursday 10 October to Sunday 13 October

Fall break for 1st-year medical students / Saturday 19 October to Tuesday 22 October

Thanksgiving holiday for medical master's and other doctoral programs / Saturday 23 November to Sunday 1 December

Thanksgiving holiday for all MD students / Thursday 28 November to Sunday 1 December

Fall semester ends for all medical master's and other doctoral programs / Saturday 14 December

Holiday break for all medical master's and other doctoral programs / Sunday 15 December to Sunday 5 January (2014)

Fall semester ends for all MD students / Friday 20 December

Holiday break for all Medical School classes / Saturday 21 December to Sunday 5 January (2014)

(2nd-year students have Study Block following Holiday Break until 2 March)

### SPRING SEMESTER 2014

Spring semester begins for all Medical School classes / Monday 6 January

Martin Luther King Jr. Day—No class or clinical activities / Monday 20 January

Spring break for medical master's and other doctoral programs / Saturday 1 March to Sunday 9 March

Spring break for 3rd-year MD students / Saturday 1 March to Sunday 9 March

Spring break for 4th-year MD students / Friday 21 March to Sunday 23 March

Instruction ends for 3rd year-MD students / Friday 18 April

Spring break for 1st-year MD students / Saturday 26 April to Sunday 4 May

Instruction ends for 4th-year MD students / Sunday 27 April

Spring semester ends for medical master's and other doctoral programs / Thursday 1 May

Commencement / Friday 9 May

Memorial Day—No class or clinical activities / Monday 26 May

Summer break begins for 1st-year MD students / Saturday 26 July

Summer break for 2nd-year MD students / Saturday 23 August to Monday 1 September

# SUMMER SESSION 2014

Maymester begins for Master of Education of the Deaf program / Monday 5 May

Maymester ends for Master of Education of the Deaf program / Friday 30 May

Full summer term begins for medical master's and other doctoral programs / Tuesday 3 June

Full summer term ends for medical master's and other doctoral programs / Friday 8 August

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BRETT SWEET, M.B.A., Vice Chancellor for Finance and Chief Financial Officer; Interim Vice Chancellor for Investments

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- ROBYN COSBY, Executive Assistant, Office of the Vice Chancellor and Dean

# **University Committees**

### **Chemical Safety**

The Chemical Safety Committee considers policies and procedures pertaining to the safe handling, transport and use of chemicals and recommends adoption of new or revised policies for the Vanderbilt University Medical Center (VUMC) and Vanderbilt University Campus (VUC) administration through Vanderbilt Environmental Health & Safety (VEHS). It monitors and interprets regulations and/or guidelines of the Environmental Protection Agency (USEPA), the Occupational Safety and Health Administration (OSHA), National Institutes of Occupational Safety Health (NIOSH) and others pertaining to hazardous chemicals and provides technical assistance to Vanderbilt Environmental Health and Safety (VEHS) on these matters. The committee reviews proposed or enacted legislation concerning chemical safety impacting the VUMC and VUC community and informs Departments, Schools and Colleges of legislation, including potential implications and business impact. It assists VUMC and VUC Colleges, Schools and Departments with their internal chemical safety committees and/or programs, in conjunction with Vanderbilt Environmental Health and Safety (VEHS).

Faculty Members: Fred Guengerich (Chair). Michael Aschner, Scott Guelcher, Tony Hmelo, Adam List, Prasad Polavarapu, Bridget Rogers, George Sweeney. Administrative and Ex Officio: Michelle Armstrong, Maralie Exton, Andrea George, Robert Hayes, Charles Nicholas, Donna DePasquale, Ruth Nagareda, Jim Slater, Lori Rolando, Kevin Warren, Bob Wheaton.

# Institutional Review Board for Human Research Protections

The Institutional Review Board is composed of three Biomedical/Health Sciences Committees, one Behavioral/Social Science Committee, and an administrative support staff. It is the IRB's responsibility to exercise appropriate administrative oversight to assure that Vanderbilt University's policies and procedures designed for the protection of the rights, safety, and welfare of human participants are effectively applied in compliance with its Federalwide Assurance. The Boards review all research proposals involving human subjects for scholarly and scientific merit, risk-potential benefit profile, and legally effective informed consent. Approval of the Board is required prior to the commencement of any human research activities.

### Behavioral/Social Sciences Committee

David Schlundt, Ph.D. (Chair). Karen Blankenship, Ph.D. (Vice Chair).
Juanita Buford, Ed.D., Benjamin W. Hornsby, Ph.D., Taneya Koonce,
M.S.L.S., M.P.H., Wayne Meadows, B.S., Lorraine C. Mion, Ph.D.,
R.N., Megan M. Saylor, Ph.D., Patricia Totty, M.A., Velma Murry, Ph.D.

# Health Sciences Committee, #1

G. Kyle Rybczyk, R.N.C., F.N.P. (Chair). James B. Atkinson, M.D., Ph.D. (Vice Chair). Robert Anderson, D.N.P., Jennifer Domm, M.D., Dana Cardin, M.D., M.S.C.I., Elliot M. Fielstein, Ph.D., William Hillis, Shelia V. Kusnoor, Ph.D., Neeraja Peterson, M.D., Casey Stupka.

# Health Sciences Committee, #2

Steven L. Goudy, M.D. (Chair). Timothy D. Girard, M.D., M.S.C.I. (Vice Chair). Tom Barbera, Jamie Dwyer, M.D. Brenton Harris, B.B.A., James C. Jackson, Psy.D., Lani A. Kajihara-Liehr, M.S.N., F.N.P., Geraldine Miller, M.D., Sanjay Mohan, M.D., Harvey J. Murff, M.D., M.P.H.

### Health Sciences Committee, #3

James A. S. Muldowney, M.D. (Chair). Saralyn R. Williams, M.D. (Vice Chair). Kristin Archer, Ph.D., Justin Cates, M.D., Mistey Cook, B.S., Mike Cull, Ph.D., Candace Floyd, Thomas M. Morgan, M.D., Olalekan Oluwole, M.D., Jason Slagel, Ph.D.

### Human Subjects Radiation Committee/Radioactive Drug Research Committee

Ronald Price, Ph.D. (Chair). Dominique Delbeke, M.D., Ph.D. (Vice Chair). Jeffrey Clanton, M.S., B.C.N.P., Robert Kessler, M.D., Henry C. Manning, Ph.D., Mark "Andy" Miller, M.S., James Patton, Ph.D., Eric T. Shinohara, M.D.

### **Medical Center Tenure Review Committee**

The Medical Center Tenure Review Committee reports to the Vice Chancellor for Health Affairs. Its membership is made up of representatives from the School of Medicine and the School of Nursing, and the Dean for Graduate Studies and Research. The committee is responsible for review of all tenure in the Medical Center.

James Pichert (Chair). Anne Marie Tharpe, Mark R. Denison, Sheila H. Ridner, Ann Minnick, Sean Donahue, Nancy Lorenzi, Elizabeth Weiner, and Alfred George.

# Vanderbilt University Institutional Animal Care and Use Committee (IACUC)

The VU Institutional Animal Care and Use Committee (IACUC) is responsible for ensuring that all animals in experimental research and teaching, under the jurisdiction of Vanderbilt University and the Veterans Administration Tennessee Valley Healthcare System (VA), are used appropriately and in accordance with the highest standards of humane care, and that research involving animals is conducted in an ethical manner.

The IACUC oversees the institutions' animal care and use program, facilities and procedures, as mandated by the Animal Welfare Act and the Public Health Service Policy.

Committee members include: Ronald Emeson, Chair. Eric Delpire, Vice Chair. Jeanne Wallace, Attending Veterinarian. Cindy Aslan, Francisco Javier Cisneros, Jeffrey Davidson, Joshua Gamse, Troy Hackett, Simon Hayward, Kristina Hill, Douglas Kernodle, Valentina Kon, Yasin Kokoye, Beth Ann McLaughlin, Ronald Perry, David Piston, Ambra Pozzi, Chad Quarles, Charlotte Sanders, Bill Valentine, Dwyan Young, Fiona Yull.

Alternate members include: Erica Armstrong, Owen McGuinness, Anna Roe, Erin Yu.

Non-voting, ex-officio members include Karen Jackson, Ruth Nagareda, Marisa Scott, Sherry Spray, Robin Trundy, Mike Walsh.

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

# Committee Voting Members:

Charles Mouton, M.D., Dean. Marquetta Faulkner, M.D., R. Daniel Beauchamp, M.D., Leon Dent, M.D., Brian Christman, M.D., Janice Cobb, R.N., M.S.N., B.S., M.A., C.P.H.Q., N.E.A.-B.C., Rahn Bailey, M.D., Michael Doukas, M.D., David Baker, M.D., David Raiford, M.D., Juan Morales, R.N., M.S.N., Stephan H. W. Heckers, M.D., Doug Southall, F.A.C.H.E., Donald Brady, M.D., William Nylander, M.D., Gloria Richard, M.D., Don Rubin, M.D., Sam Sells, M.D., Gary Trende, F.A.C.H.E., Susanne Tropez-Sims, M.D., Duane Smoot, M.D., Nancy Brown, M.D., James Staiger, M.D., Roger Zoorob, M.D.

# Valley Healthcare System (VA TVHS) (formerly Vice Chancellor's Committee for the Veterans Administration)

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. Vanderbilt members are appointed by the Health System Director of TVHS on nomination by the Vice Chancellor for Health Affairs.

Jeffrey R. Balser, M.D., Dean. David Raiford, M.D., Chair. Brian W. Christman, M.D., Janice Cobb, R.N.; Colleen Conway-Welch, Ph.D., C.N.M.; Stephan Heckers, M.D.; Sam Sells, M.D.; R. Daniel Beauchamp, M.D.; William Nylander, M.D.; Donald Brady, M.D.; Michael Doukas, M.D.; Eric Neilson, M.D.; Juan A. Morales, R.N., M.S.N.; Joyce Jones, M.D.; Bonnie M. Miller, M.D.; Emma Metcalf, R.N., M.S.N.

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# School of Medicine Administration

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- ROBERT S. DITTUS, M.D., M.P.H., Senior Associate Dean for Population Health Sciences
- JOHN F. MANNING, JR., Ph.D., Senior Associate Dean for Operations and Administration
- BONNIE M. MILLER, M.D., Associate Vice Chancellor for Health Affairs; Senior Associate Dean for Health Sciences Education
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- ANDERSON W. SPICKARD III, Assistant Dean for Educational Informatics and Technology
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- TBD, Director, Medical School Admissions
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- BARBARA CARTER, Executive Assistant, Office of the Vice Chancellor and Dean
- ROBYN COSBY, Executive Assistant, Office of the Vice Chancellor and

# **Executive Faculty**

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# Standing Committees

(The dean is an ex officio member of all standing and special committees.)

### **Admissions**

The Admissions Committee has the responsibility of reviewing medical school applications for admission and making recommendations to the dean for the admission of those students who are considered best qualified.

# 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.

Talat (Alp) Ikizler, Co-chair; Alan Storrow, Co-chair. Shari Barkin, David Charles, David Haas, Robert Levine, Lorraine Mion, Deborah Murdock, Harvey Murff, Bogdan Nowicki, Josh Peterson, Satish Raj. Ex officio: Gordon R. Bernard, Italo Biaggioni, Frank E. Harrell, David Robertson.

### **Faculty Appointments and Promotions**

The committee, appointed by the dean, is responsible for consideration of faculty promotions in the School of Medicine and for examination of credentials of candidates for appointment to faculty positions.

M. Kay Washington, Chair. William O. Cooper, Peter F. Guengerich, Cathleen C. Pettepher, Carmen C. Solorzano, Marie Griffin, Reed A. Omary, Neal R. Patel, Richard M. Peek, Jr., William P. Tansey, P Anthony Weil. Ex officio: John S. Penn, David S. Raiford.

# **IGP/QCB Steering Committee**

The Steering Committee for the Interdisciplinary Graduate Program and the Quantitative and Chemical Biology Program is composed of the directors of graduate studies for the thirteen participating departments and programs. Topics discussed include student recruitment, training goals for graduates, and curriculum development and assessment.

Susan Wente, Chair. Christopher Aiken, G. Roger Chalkley, Jin Chen, David Cortez, Bruce Damon, Katherine Friedman, Kathy Gould, Vsevolod Gurevich, Alyssa Hasty, Shane Hutson, Jay Jerome, Douglas McMahon, James G. Patton, David Piston, Carmelo Rizzo, David Samuels, Matthew Tyska, Julia Velkovska, P. Anthony Weil.

# 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, Cancer Biology, Cell and Developmental Biology, Molecular Physiology and Biophysics, Neuroscience, Pathology, Microbiology and Immunology, and Pharmacology and to the graduate programs in Chemical and Physical Biology, Human Genetics, and Neuroscience for the completion of the Ph.D.

James G. Patton, Chair. Seth Bordenstein, Kevin Currie, Barbara Fingleton, Christine Konradi, Sebastian Joyce, Ethan Lee, Richard M. O'Brien, Charles Sanders, Kevin Schey, and Bill Valentine. Ex officio: G. Roger Chalkley, Michelle Grundy.

### **Global Health Education Committee**

The Global Health Education Committee (GHEC) supports the vision of the Vanderbilt University Medical Center to provide an array of global health educational, research, and service opportunities for the VUMC community while simultaneously enhancing the capacity of our partners in a collaborative effort to address global health challenges.

Donald Brady, Quentin Eichbaum, Natasha Halasa, Doug Heimburger, Marie Martin, Bonnie Miller, Melinda New, and Cathryn Rolfe.

### **Medical Center Conflict of Interest Committee**

The Conflict of Interest Committee is appointed by and advisory to the Dean of the School of Medicine. It is charged to review individual faculty circumstances where a possible conflict of interest or commitment might exist. The committee makes recommendations to the department chairs and the dean concerning their review.

Donald Arnold, Alan Bentley, Italo Biaggioni, Lonnie Burnett, Richard Caprioli, Fred Goad, Elizabeth Heitman, Kenneth Holroyd, Rebecca Keck, Leona Marx, David Raiford, Donald Rubin, Michael Stabin, Alastair J. J. Wood.

# Medical Scientist Training Program Faculty Advisory Committee

The MSTP Faculty Advisory Committee (FAC) is appointed annually by the dean to assist in the admissions process and provide program oversight and strategic planning. Each applicant for the MSTP is interviewed individually by several members of the FAC, which serves as the School of Medicine Admissions Committee for the MSTP. The FAC includes several institutional leaders and senior scientists with responsibility for M.D. and Ph.D. training.

Terence S. Dermody, Director. Danny Winder, Associate Director.
James L. Bills, Michelle M. Grundy, Assistant Directors. R. Daniel
Beauchamp, Bruce D. Carter, Dana Crawford, Kevin Ess, Cynthia
Gadd, James R. Goldenring, Katherine Hartmann, Duco Jansen,
Laura A. Lee, Kevin G. Niswender, Dan M. Roden, Michelle SouthardSmith, Larry Swift, Mark Wallace, Alissa M. Weaver, Sally York, Roy
Zent. Student Members: Mary Ellen Koran, Megan Culler Freeman,
Blair Stocks. Ex officio: Jeffrey R. Balser, G. Roger Chalkley, André
Churchwell, Fatima Lima, Kim Lomis, Bonnie M. Miller, Scott M.
Rodgers, Susan R. Wente, John A. Zic.

# Medical Scientist Training Program Senior Oversight Committee

The MSTP Senior Oversight Committee provides guidance about all aspects of the program. This committee meets once or twice each year and is focused on strategic planning and program oversight.

Terence S. Dermody, Director. Danny Winder, Associate Director. James L. Bills, Michelle M. Grundy, Assistant Directors. G. Roger Chalkley, Chair. Kimberly D. Lomis, Bonnie M. Miller, David Robertson, Scott M. Rodgers, Susan R. Wente.

### **Student Promotions Committees**

Each promotions committee will have 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 for which it is responsible.

### Class of 2014

Joseph Gigante, Chair, Roland D. Eavey, Ingrid A. Mayer, John W. Seibert, John V. Williams. Ex officio: André L. Churchwell, Bonnie M. Miller, Scott M. Rodgers.

### Class of 2015

Natasha B. Halasa, Chair, Geoffrey M. Fleming, William M. Gregg, Amold W. Malcolm, Kevin D. Niswender. Ex officio: André L. Churchwell, Bonnie M. Miller, Scott M. Rodgers.

# Class of 2016

Bonnie S. Slovis, Chair, Robert H. Carnahan, Celeste O. Hemingway, Kevin B. Johnson, Barron L. Patterson. Ex Officio: André L. Churchwell, Bonnie M. Miller, Scott M. Rodgers.

# Class of 2017

Roy Zent, Chair. Meg Benningfield, Kecia Carroll, Hank Jennings, Lisa Mendes, Nipun Merchant, James Powers, Shannon Snyder. Ex officio: André Churchwell, Scott M. Rodgers, Bonnie M. Miller.

### **Undergraduate Medical Education Committee**

The Undergraduate Medical Education (UME) Committee is appointed by the dean and consists of faculty, staff, and students. It is charged with the complete management of the undergraduate curriculum, including content, teaching methods, and assessment of both students and the curriculum itself. The committee reports to the dean and the executive faculty, and can offer recommendations for major changes in curricular programs and policies.

The UME Executive Committee (UMEC) is composed of six department chairs, three from the basic sciences and three from the clinical disciplines. In addition, there is one faculty representative from each of the four years of medical school. The chair(s) of the Student Curriculum Committee also sits on UMEC. UMEC is chaired by a faculty member appointed by the dean. This committee meets at least quarterly to review courses, to review policy, and to guide the development of new curricular offerings. Each year, UMEC sponsors a curriculum summit to share information with all members of the UME committee regarding student and curricular outcomes for that year.

James B. Atkinson, Chair. Joey V. Barnett, R. Daniel Beauchamp, Roland D. Eavey, Stephan H. Heckers, Neil Osheroff, Margaret Rush, Warren S. Sandberg, Anderson Spickard III, Lynn Webb, Steve A. Webber. Ex officio: André L. Churchwell, Kim Lomis, Bonnie M. Miller, Scott M. Rodgers, Kimberly N. Vinson. Non-voting—Don Moore, William Preble, Donna Rosenstiel; Director of Student Records. There is student representation on this committee and on each year team listed below.

Phase and Year Teams consist of the course directors and major teachers responsible for implementation of the curriculum for each of the phases or years 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 UME faculty chair coordinate the work of the Phase and Year Teams to support the curricular quality improvement process.

Foundations of Medical Knowledge Team: Neil Osheroff, Chair. Ban Allos, Arthur Dalley, Mario Davidson, Terry Dermody, Jill Gilbert, Natasha Halasa, Tina Hartert, Christina C. Marasco, Jennifer Najjar, Lillian Nanney, John Newman, Cathleen C. Pettepher, Meredith E. Pugh, Tyler Reimschisel, Luc Van Kaer. Ex officio: Kimberly D. Lomis, Bonnie M. Miller, Scott M. Rodgers, Donna Rosenstiel, Director of Student Records.

Foundations of Clinical Care Team: James B. Atkinson, Chair. Joseph A. Awad, Joey V. Barnett, William B. Cutrer, Michael Fowler, Katherine Murray, Jeanette Norden, Derek Riebau, Lynn Webb. Ex officio: Kimberly D. Lomis, Bonnie M. Miller, Scott M. Rodgers, Donna Rosenstiel; Director of Student Records.

Years 3 and 4 Team: Anderson Spickard III, Chair. Ban Allos, Ronald L. Cowan, William B. Cutrer, Steven J. Eskind, Amy E. Fleming, Jennifer K. Green, Sara Martin, Matthew Miller, Camiron Pfennig, Derek Riebau, Charles Rush, Kurt A. Smith. Ex officio: Kimberly D. Lomis, Bonnie M. Miller, Scott M. Rodgers, Donna Rosenstiel; Director of Student Records



# Medical Center Overview

ANDERBILT University Medical Center (VUMC) has a three-fold mission: the education of health professionals, research in medical sciences, and patient care. This mission is carried out in five primary units: the School of Medicine, the School of Nursing, The Vanderbilt Clinic, Vanderbilt University Hospital, and the Monroe Carell Jr. Children's Hospital at Vanderbilt, all places where patients receive exemplary care from physicians and nurses who are creative teachers and scholars.

Members of the faculty participate directly in patient care. Their practice encourages the free flow of ideas among the School of Medicine, the School of Nursing, and the clinical units, facilitating joint research activities. As a result, VUMC can undertake significant, innovative programs that set the standards for health care in the region.

Outstanding patient care and technological innovation have established Vanderbilt's reputation as a leading referral center in the Southeast. Physicians from other states and countries refer to Vanderbilt patients whose needs demand interdisciplinary skills and expert knowledge. Consequently, students in the medical center encounter a wider range of diseases than they would be likely to see in many years of private practice.

VUMC has combined programs of study with a number of other schools including divinity, business, engineering, and law, which enables interdisciplinary programs in philosophy, religion, and the social sciences.

Through medical education and excellence in patient care, VUMC strives to improve health for each person it serves. Through innovation and discovery in research, it strives to advance health care worldwide.

### **Facilities**

# Vanderbilt University Hospital

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.

# The Monroe Carell Jr. Children's Hospital at Vanderbilt

The Monroe Carell Jr. Children's Hospital at Vanderbilt is a place of hope and healing for patients and their families. Recognized as one of the premier children's hospitals in the nation by *U.S. News and World Report* for several 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 the state, 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-level teaching and research facility. No child is denied care on the basis of limited ability to pay

# Vanderbilt Psychiatric Hospital

This facility provides 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 year-round accredited school for children and adolescents.

vanderbilthealth.com/psychiatrichospital

### The Vanderbilt Clinic

The Vanderbilt Clinic and Medical Center 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; amputees; 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. It is also home to the Vanderbilt Center for Multiple Sclerosis. 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-three of the world's elite cancer centers collaborating to improve cancer care for patients everywhere. The center unites nearly 300 physicians and scientists in seven research programs in key areas. VICC is ranked in the top 10 in competitively-awarded NCI grant support.

VICC clinicians offer state-of-the art, personalized care for more than 6,000 new cancer patients and more than 65,000 outpatient visits annually. 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, the Jim Ayers Institute for Precancer Detection and Diagnosis,

and the Robert J. Kleberg, Jr., and Helen C. Kleberg Center for Personalized Cancer Medicine.

vicc.org

# 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. The center brings together scientists and practitioners in behavior, education, genetics, and neuroscience to work together in unique ways to solve the mysteries of development and learning. 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 more than eighty VUMC faculty members.

vanderbilthealth.com/diabetes

### 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, biochemistry, 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, and was formerly known as Medical Research Building II. This building consolidates the Vanderbilt-Ingram Cancer Center's programs into one primary location on the VUMC campus.

# Medical Research Building III

The MRB III building 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

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 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 400,000-square-foot doctors office suite is designed for easy access off the interstate highway system, abundant surface parking, automated check-in, and integrated services, labs, and radiology. It houses several specialty clinics, primary care services, and advanced imaging facilities.

vanderbilthealth.com/100oaks

### Vanderbilt Health Williamson County

Vanderbilt Health Williamson County offers more than 100 physicians in practices ranging from primary care to sports medicine, GI, cancer care, imaging, and pediatrics.

vanderbilthealth.com/williamson

# Mary Ragland Godchaux Hall

Built in 1925, Mary Ragland Godchaux Hall is located between the Jean and Alexander Heard Library and MRB III of the Vanderbilt University Hospital. Faculty and administrative offices and research space for the Nursing School are located within this building. In 2006, Godchaux Hall completed a twoyear renovation to update the building infrastructure.

Godchaux Hall contains a state-of-the-art IP-based videoconferencing classroom, two research interview rooms with video and audio recording options, a research observation room with video and audio recording controls, three equipped small seminar/conference rooms, one moderate-size electronic classroom for use with laptops, and an audiovisual-equipped living room. Together with a sunlit atrium connecting the building with others in the nursing complex, Godchaux Hall Annex comprises 48,771 square feet. The facility includes two large- and two medium-size lecture halls, as well as four seminar-size classrooms. All can be quickly equipped for audio and video recording to tape or broadcast via streaming media. All classrooms have permanently installed projection devices and an up-to-date presentation computer. All afford wireless access to the Internet. The four larger halls are equipped with Smart technology at the lectern.

Center for Research Development and Scholarship (CRDS). Housed on the fourth floor of Godchaux Hall, CRDS provides research consultation, support, and resources for scholarly

and research projects. CRDS assists with grant proposal development, Institutional Review Board application, paper and poster presentation, database management, instrument development, use of computers, literature searches, reference retrieval, and manuscript preparation. CRDS resources are available to all School of Nursing faculty investigators.

### Patricia Champion Frist Hall

In 1998, the 20,259-square-foot Patricia Champion Frist building, located adjacent to Godchaux Hall, was completed. This building houses the Frist Nursing Informatics Center, a multimedia classroom with installed networking for seventy-five students, a health-assessment/multi-purpose classroom, a student lounge, a reception area, and fifty faculty offices. Two large and two small classrooms have installed infrastructure capable of video streaming live lectures. Godchaux Hall, the Annex, and Frist Hall are joined by a common Atrium. Thus, the three buildings of the School of Nursing and the Atrium form a self-contained, cohesive instructional and social complex.

The Frist Nursing Informatics Center (FNIC). The FNIC student computer labs, located in Patricia Champion Frist Hall, are equipped with twenty-seven Dell Precision T1650 computers (Intel i5-3350 3.36GHz processor with 4 GB of RAM and a 500 GB hard drive loaded with Windows 7, a 48X CD-RW/DVD-RW drive, and USB access for a personal thumb drive), two scanners, and three laser printers. An additional eight units are installed in a Testing Lab to accommodate the growth of proctored Web-based testing in a quiet environment. All computers are placed on a three-year rotation cycle. For some courses, students schedule testing dates in order to suit individual needs within a range of dates allowed by course faculty.

A full range of software is available for document preparation; however, fewer tools are available on computers dedicated to testing. Instructional software is also available over the network or via CD/DVDs from the media library. Faculty and students use a Web-based course management system called OAK (Online Access to Knowledge), which is built on Blackboard, for most course communication, group activities, and the sharing of course resources. In addition, two-way synchronous audio and graphic collaboration is available using a Web conferencing system called Microsoft Lync; and two-way, multi-point IP-based video collaboration is available using a system called Scopia. Experts in graphics, interactive educational design, and information technology are available through the FNIC. Consultation and troubleshooting activities include assistance with design and development of instructional strategies, development of specialized interactive computer-based programs and Web pages, design and maintenance of databases, design and development of graphics and instructional materials, video production, and audiovisual editing services. The FNIC implements and maintains quality assurance for School of Nursing Web pages and printed materials with assistance from designated departmental staff and program faculty.

# 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. vanderbilthealth.com/dayani

# Vanderbilt Center for Better Health

The Vanderbilt Center for Better Health'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.

mc.vanderbilt.edu/vcbh

### 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 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

### Libraries

### The Jean and Alexander Heard Library System

Vanderbilt University's libraries are among the top research libraries in the nation, home to more than eight million items, including print publications, microfilm items, and digital collections. The libraries provide electronic access to tens of thousands of full-text journals and more than half a million e-books and other research resources accessible via the campus network, from 250 workstations in campus libraries, as well as authenticated access (VUnetID and e-password) from off campus. The libraries' homepage receives more than 3,750,000 visits annually. Resources may be located through Acorn, the libraries' online catalog, and through DiscoverLibrary, the libraries' new information discovery tool.

The oldest manuscript in the collection dates from ca. 1300, and new publications are being added every day. Among the libraries' collection strengths are the W. T. Bandy Center for Baudelaire and Modern French Studies, a comprehensive collection of materials on Charles Baudelaire and French literature and culture; the Southern Literature and Culture Collection; Latin American collections for Brazil, Colombia, the Andes, Mesoamerica, and Argentina; the Television News Archive, the world's most extensive and complete archive of television news covering 1968 to the present; the Revised Common Lectionary, one of the first published Web-based resources of scriptural readings for the liturgical year; and the Global Music Archive, a multimedia reference archive and

resource center for traditional and popular song, music, and dance of Africa and the Americas.

In partnership with faculty, library staff teach students valuable skills for locating and evaluating the latest information in a complex array of sources. Campus libraries with discipline-specific collections are home to professional librarians who provide expert support in that area of study. Online reference is available through the homepage. Options for individual study are complemented by group study spaces and instructional rooms, as well as learning commons and cafes. Exhibits throughout the libraries offer intellectual and creative insights that encourage students to see their own work in new ways. Students, faculty, and staff may come to the library to read in a cozy nook, meet friends for group study, grab a quick meal, or see an exhibit.

library.vanderbilt.edu

The Annette and Irwin Eskind Biomedical Library

The Eskind Biomedical Library (EBL) collects and provides access to materials to support the teaching, research, and service missions of Vanderbilt University Medical Center.

### **Affiliated Facilities**

Vanderbilt is closely affiliated with the 485-bed Veterans Administration Medical Center, a Vice Chancellor's Committee hospital containing acute-care beds and outpatient facilities.

### Meharry-Vanderbilt Alliance

This collaboration between two unique institutions fosters a diverse educational and scientific environment, The alliance focuses on clinical science training, academic support, biomedical research, and health services initiatives with a goal of eliminating health care disparities and improving outcomes. The alliance offers a Meharry-Vanderbilt Student Alliance (MVSA), which involves more than 200 students from both campuses in educational, clinical, and community service programs. *meharry-vanderbilt.org* 

### Information Technology Services

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

ITS maintains and supports VUnet, the campuswide data network that provides access to the Internet, and VUnetID, the authentication service that enables Vanderbilt users to securely identify themselves to many services on VUnet. Those services include YES, Your Enrollment Services; Online Access to Knowledge (OAK); and Vmail, the university's email system. Vmail also includes VUmailguard, designed to protect your email from viruses, unwanted mail (spam), and high-risk attachments.

ITS maintains the campus phone (voice) network, including personal phone lines for resident students. Optional services include voice mail and long-distance calls from campus (V-net). ITS also partners with Sprint, Verizon, and AT&T to offer discounts for cellular phone service. For discount information see *its.vanderbilt.edu/cellphone*.

Vanderbilt offers all students the latest version of Microsoft Office and Microsoft Windows free of charge through our Microsoft Campus Agreement. See *softwarestore.vanderbilt.edu* for more information.

Through the Digital Life initiative, Vanderbilt highlights VUmix, legal, safe, inexpensive, and easy ways to explore and share music and digital content. See *digitallife.vanderbilt.edu* and *www.vanderbilt.edu/vumix* for details.

ITS offers various conferencing and collaboration services for students. Vanderbilt's blog service offers Wordpress Blogs at web.vanderbilt.edu/blog/. Audio and video conferencing via desktop or a Polycom bridge, and the ITS podcast studio are just a few of the services available. See its.vanderbilt.edu/services/collaboration for more information.

The ITS Help Desk provides information to students, faculty, and staff about VUnet and VUnet services. Help Desk locations, hours, contacts, and other information can be found at *its.vanderbilt.edu/helpdesk*.

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

### The 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 330-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.

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

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

*Graduate School.* Master of Arts, Master of Arts in Teaching, 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 Health Professions Education, Master of Laboratory Investigation, Master of Public Health, Master of Science in Clinical Investigation, Master of Science in Medical Physics, Master of Science (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 Science in Finance. Peabody College. Bachelor of Science, Master of Education, Master of Public Policy, Doctor of Education.

No honorary degrees are conferred.

# Accreditation

Archived 2013/2012 Archived 2013/2012 Catalog Vanderbilt University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award bachelor's, master's, education specialist's, and doctor's degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097 or call (404) 679-4500 for questions about the accreditation of Vanderbilt University.

# Life at Vanderbilt

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.

### **Graduate Student Council**

The Graduate Student Council (GSC) exists to enhance the overall graduate experience at Vanderbilt by promoting the general welfare and concerns of the Graduate School student body, creating new programs and initiatives to provide opportunities for growth and interaction, and communicating with the Vanderbilt faculty and administration on behalf of graduate students. These goals are accomplished through a structure of elected representatives, standing committees, and officers. Meetings, which are open to all graduate students, are held monthly. Council meetings provide a forum in which to address many types of concerns. In the recent past, the GSC has helped change policies involving the process for approving dissertations, TA advocacy, parking, student health insurance coverage, housing, and the student-funded recreation center. The GSC is also a member of the National Association of Graduate and Professional Students (NAGPS).

In addition to its representative function, the GSC also organizes a number of events and hosts/sponsors various projects during the year. Some examples include co-sponsoring seminars and panels with individual departments, Graduate Student Research Day (early spring semester), the Graduate Student Honor Council, community outreach activities, and social opportunities. The GSC also awards travel grants to graduate students who wish to present their research at conferences throughout the year. All Vanderbilt Graduate School students are welcome to attend GSC's monthly meetings and to get involved. For more information, visit vanderbilt.edu/gradschool.

### Housing

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 (apphost1a.its.vanderbilt.edu/housing/Main/). The referral service lists information on housing accommodations off campus. The majority of rental property is close to the campus. Cost, furnishings, and conditions vary greatly. For best choices, students seeking off-campus housing should visit the office or consult the website by early July for suggestions and guidance. The website includes advertisements by landlords looking specifically for Vanderbilt-affiliated tenants, as well as by Vanderbilt students looking for roommates. Listings are searchable by cost, distance from campus, number of bedrooms, and other parameters. Students may also post "wanted" ads seeking roommate or housemate situations. On-campus university housing for graduate or professional students is not available.

### Change of Address

Students who change either their local or permanent mailing address are expected to notify school and university registrars immediately. Candidates for degrees who are not in residence should keep the school and University Registrar informed of

current mailing addresses. To change or update addresses, go to registrar.vanderbilt.edu/academicrec/address.htm.

### 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 Student Recreation 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, visit *vanderbilt.edu/commodorecard*.

### **Eating on Campus**

Vanderbilt Dining operates several restaurants, cafes, 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. Six convenience stores on campus offer grab-and-go meals, snacks, beverages, and groceries. All units accept the Commodore Card and Meal Plans. Graduate student Meal Plans are offered at a discount. For more information, hours, and menus, visit vanderbilt.edu/dining.

### 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*. A paper copy of the Undergraduate Catalog may be obtained by contacting the Office of Undergraduate Admissions, 2305 West End Avenue, Nashville, Tennessee 37203-1727, (800) 288-0432, (615) 322-2561, *admissions@vanderbilt.edu*. Paper copies of the catalogs for the graduate and professional schools may be available from the individual schools.

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 on the Vanderbilt University website at *vanderbilt.edu/financialaid*. The Office of Student Financial Aid is located at 2309 West End Avenue, Nashville, Tennessee 37203-1725, (615) 322-3591 or (800) 288-0204.

Information about graduation rates for students at Vanderbilt University is available on the Vanderbilt University website at *virg.vanderbilt.edu*. Select "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, 2301 Vanderbilt Place, 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/annual-security-report*. 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, TN 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/academicrec/privacy.htm. Paper copies of this information about educational records may be obtained by writing the Office of the University Registrar, Vanderbilt University, PMB 407701, 2301 Vanderbilt Place, Nashville, TN 37240-7701 or by calling (615) 322-7701. For more information, see "Confidentiality of Student Records" in the following section of this catalog.

# Services to Students

# Confidentiality of Student Records (FERPA)

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:

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

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

The right to consent to disclosures of personally identifiable information contained in the student's education records to third parties, except in situations that FERPA and its regulations allow disclosure without the student's consent. A complete list of the exceptions may be found at 34 CFR Part 99.31. These exceptions include, but are not limited to, the following examples:

Disclosure to school officials with legitimate educational interests. A
 "school official" is a person employed by the university in an administrative, supervisory, academic, 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.
- To parents if the student is a dependent for tax purposes.
- 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.
- Information to a parent or legal guardian of a student 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 twenty-one at the time of the disclosure to the parent/guardian.

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, addresses, telephone number, email address, student ID photos, date and place of birth, major field of study, school, classification, participation in officially recognized activities and sports, weights and heights of members of athletic teams, dates of attendance, degrees and awards received, the most recent previous educational agency or institution attended by the student, and other information that would not generally be considered harmful or an invasion of privacy if disclosed. Any new entering or currently enrolled student who does not wish disclosure of directory information should notify the University Registrar in writing. No element of directory information as defined above is released for students who request nondisclosure except in situations allowed by law. The request to withhold directory information will remain in effect as long as the student continues to be enrolled, or until the student files a written request with the University Registrar to discontinue the withholding. To continue nondisclosure of directory information after a student ceases to be enrolled, a written request for continuance must be filed with the University Registrar during the student's last term of attendance.

If a student believes the university has failed to comply with FERPA, he or she may file a complaint using the Student Complaint and Grievance Procedure as outlined in the *Student Handbook*. If dissatisfied with the outcome of this procedure, a student may file a written complaint with the Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Avenue SW, Washington, D.C. 20202-8520.

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

### Vanderbilt Directory Listings

Individual listings in the online People Finder Directory consist of the student's full name, school, academic classification, local phone number, local address, box number, permanent address, and email address. Student listings in the People Finder Directory are available to the Vanderbilt community via logon ID and e-password. Students have the option of making their People Finder listings available to the general public (viewable by anyone with access to the Internet), of adding additional contact information such as cellular phone, pager, and fax numbers, and of blocking individual directory items. Students who have placed a directory hold with 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 selecting the address change icon at <a href="https://webapp.mis.vanderbilt.edu/student-search">https://webapp.mis.vanderbilt.edu/student-search</a>.

### **Psychological and Counseling Center**

The Psychological and Counseling Center is a broad-based service center available to full-time students, faculty, staff, and their partners and dependents. Services include: (1) family, couples, individual, and group counseling and psychotherapy; (2) psychological and educational assessment; (3) vocational assessment and counseling; (4) programs such as assertiveness training; marital communication; individual reading and study skills/test-taking techniques; body image, stress, and time management; group support programs for acquiring skills such as relaxation; (5) administration of national testing programs; (6) outreach and consultation; (7) special programming related to diversity issues; (8) campus speakers and educational programs. Some full-time students at Vanderbilt come to the university with ongoing psychiatric medication management needs or find they would benefit from evaluation for these medications. For these appointments please call (615) 322-3414.

Eligible persons may make appointments by visiting the Psychological and Counseling Center or by calling (615) 322-2571. Services are confidential to the extent permitted by law. For more information, see the website, *vanderbilt.edu/pcc*. The site also contains self-reflection questions and information resources for counseling services.

### Center for Student Professional Development

The Center for Student Professional Development, formerly known as the Vanderbilt Career Center, serves graduate students who are enrolled full time in master's or Ph.D. programs and are interested in pursuing opportunities in industry, government, and/or nonprofits. Students pursuing academic employment should contact their faculty advisers or the departments in which they are currently enrolled for career advising and job search assistance. Graduate students who are undecided about their career goals are encouraged to contact the Vanderbilt Psychological and Counseling Center for career assessment and counseling and then be referred to the Center for Student Professional Development for appropriate follow-up. For detailed information, visit *vanderbilt.edu/career*.

### **Student Health Center**

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

The following primary care health services are provided to students registered in degree-seeking status: visits to staff physicians and nurse practitioners; routine procedures; educational information and speakers for campus groups; and specialty clinics held at the SHC. Most visits are free of charge, but there are small co-pays for some procedures, and for medications or supplies purchased at the Student Health Center.

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

The entire medical staff is composed of physicians and nurse practitioners who have chosen student health as a primary interest and responsibility.

The Zerfoss Student Health Center is open from 8:00 a.m. to 4:30 p.m., Monday through Friday, and 8:30 a.m. until noon on Saturday (except during scheduled breaks and summer). Students should call ahead to schedule appointments, (615) 322-2427. A student with an urgent problem will be given an appointment that same day, or "worked in" if no appointment is available. When the Student Health Center is closed, students needing acute medical care may go to the Emergency Department of Vanderbilt University Hospital. They will be charged by the VU Medical Center for Emergency Department services.

Students may also call (615) 322-2427 for twenty-four-hour emergency phone consultation, which is available seven days a week (except during summer and scheduled academic breaks). On-call Student Health professionals take calls after regular hours. Calls between 11:00 p.m. and 7:00 a.m. are handled by the Vanderbilt University Emergency Department triage staff. More information is available on the Web (vanderbilt.edu/student\_health).

### Immunization Requirements

The State of Tennessee requires certain immunizations for all students (undergraduate, graduate, and professional) on university campuses. As such, Vanderbilt University will block student registration for those who are not in compliance with the requirements. In order to accommodate students who have difficulty acquiring their records or needed vaccinations, incoming students not in compliance with the state laws will be enrolled for their first semester, but if they fail to comply within two months of enrollment, registration for the second semester will not be permitted.

The requirements include:

- Meningococcal meningitis vaccine (one injection) for all incoming students living in on-campus housing.
- 2. Varicella vaccine (two injections) is required for all students who have not had documented chickenpox. Any waivers for this vaccine are very strict, and include only certain religious or medical exemptions that must be approved by the medical director of the Student Health Center. For more information regarding this waiver, please call the director's assistant at (615) 322-2254 or email studenthealth@vanderbilt.edu.
- 3. Measles, mumps, and rubella (2 injections) for all incoming students. Any waivers for this vaccine are very strict, and include only certain religious or medical exemptions that must be approved by the medical director of the Student Health Center. For more information regarding this waiver, please call the director's assistant at (615) 322-2254 or email studenthealth@vanderbilt.edu.

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 with vaccination information.

Students should go to vanderbilt.edu/student\_health/link/immunization-requirements in order to access more

information regarding the immunization requirements. This site also contains links to the PDFs of the required forms.

All vaccines can be administered at either a private provider office or at the Student Health Center.

# Student Injury and Sickness 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 *gallagherkoster.com/vanderbilt*, in the Office of Student Accounts, or at the Student Health Center.

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

A student who does not want to subscribe to the insurance plan offered through the university must complete an online selection/waiver process through the Office of Student Accounts (vanderbilt.edu/stuaccts) or via the insurance company (gallagherkoster.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 6, 2013. The online selection/waiver process indicating comparable coverage must be completed every year in order to waive participation in the Student Injury and Sickness Insurance Plan.

Family Coverage: Students who want to obtain coverage for their families (spouse, children, or domestic partner) may secure application forms by contacting the on-campus student insurance representative, (615) 343-4688. Dependents can also be enrolled online at *gallagherkoster.com/vanderbilt* using a credit card. Additional premiums are charged for family health insurance coverage.

# International Student Coverage

International students and their dependents residing in the United States are encouraged to purchase the university's international student injury and sickness insurance. If you have other comparable insurance and do not wish to participate in the Student Injury and Sickness Insurance Plan offered through the university, you must complete an online waiver form (gallagherkoster.com/vanderbilt) indicating your other insurance information. This online waiver form must be completed no later than September 7 or you will remain enrolled in the plan offered by the university and will be responsible for paying the insurance premium. Health insurance is required for parttime as well as full-time students. Information and application forms are provided through the Student Health Center.

### Vanderbilt Child and Family Center

The Vanderbilt Child and Family Center supports the health and productivity of the Vanderbilt community by providing resource and referral services and quality early childhood education and care to the children of faculty, staff, and students. The center's website at *childandfamilycenter.vanderbilt.edu* provides information concerning child care, elder care, summer camps,

tutoring services, and school-age child care. Parents in a Pinch and the Vanderbilt Sitter Service provide back-up care options for dependents of all ages and evening, night, and weekend care.

The Child Care Center serves children ages six weeks through five years. Applications for the waiting list may be downloaded from the website. The Family Center offers a monthly lunchtime series, Boomers, Elders, and More, and a caregiver support group.

### **Services for Students with Disabilities**

Vanderbilt is committed to the provisions of the Rehabilitation Act of 1973 and Americans with Disabilities Act as it strives to be an inclusive community for students with disabilities. Students seeking accommodations for any type of disability are encouraged to contact the Equal Opportunity, Affirmative Action, and Disability Services Department. Services include, but are not limited to, extended time for testing, assistance with locating sign language interpreters, audiotaped textbooks, physical adaptations, notetakers, and reading services. Accommodations are tailored to meet the needs of each student with a documented disability. The Equal Opportunity, Affirmative Action, and Disability Services Department also investigates alleged violations of Vanderbilt's nondiscrimination and antiharassment policies. Specific concerns pertaining to services for people with disabilities or any disability issue should be directed to the Disability Program Director, Equal Opportunity, Affirmative Action, and Disability Services Department (EAD), PMB 401809, 2301 Vanderbilt Place, Nashville, Tennessee 37240-1809; phone (615) 322-4705 (V/TDD); fax (615) 343-0671; vanderbilt.edu/ead.

# 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.

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, and a variety of university-owned facilities throughout the Davidson County area. Non-commissioned and commissioned officers staff the department. Commissioned officers are empowered to make arrests as "Special Police Officers," through the authority of the Chief of Police of the Metropolitan Government of Nashville and Davidson County. Vanderbilt officers with Special Police Commissions 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.

The Vanderbilt University Police Department includes a staff of more than one hundred people. All of Vanderbilt's commissioned officers have completed officer training at a state-certified police academy. Those officers hold Special Police Commissions and are required to attend annual in-service, as well as on-the-job training. VUPD has thirty-two community service officers who lend assistance 24/7 to the Vanderbilt community through services that include providing walking escorts, providing jump starts, and unlocking cars. For non-emergency 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 5:00 p.m. to 5:00 a.m. GPS technology allows students to track Vandy Vans on their route via computer or mobile phone, and to set up text message alerts to let them know when a van will be arriving at their stop.

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. Additional information about Vandy Vans and specific stop locations can be found at *police.vanderbilt.edu/vandy\_vans* or by calling (615) 322-2558.

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 421-8888 (off campus) or 1-8888 (on campus).

*Emergency Phones*—Emergency telephones (Blue Light Phones) are located throughout the university campus and medical center.

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 received by dialing 911 from any campus phone. Cell phone users can use (615) 421-1911 to elicit an emergency response on campus. Cell phone users should dial 911 for off-campus emergencies. All callers should be prepared to state their location.

Security Notices—Security Notices are distributed throughout Vanderbilt to make community members aware of significant unsolved crimes that occur at the university. They are distributed through Vanderbilt email lists and through the department's webpage, police.vanderbilt.edu.

Educational and Assistance Programs—The Community Relations Division 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) 322-2558 or visit police.vanderbilt.edu.

Additional information on security measures and crime statistics for Vanderbilt is available from the Vanderbilt University Police Department, 2800 Vanderbilt Place, Nashville, Tennessee 37212. Information is also available at *police.vanderbilt.edu*.

### Annual Security Report

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, Vanderbilt University will provide you, upon request, an annual security report on university-wide security and safety, including related policies, procedures, and crime statistics. A copy of this report may be obtained by writing or calling the Vanderbilt University Police Department, 2800 Vanderbilt Place, Nashville, Tennessee 37212 or by telephone at (615) 343-9750. You may also obtain this report on the website at police.vanderbilt.edu/annual-security-report.

# 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 the Office of Traffic and Parking located in the Wesley Place garage. A fee is charged. Parking regulations are published annually and are strictly enforced. More information is available at *vanderbilt.edu/traffic\_parking*.

Bicycles must be registered with the Vanderbilt University Police Department.

All graduate and professional school 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.

### Graduate Development Network

The Graduate Development Network (GDN) is an informal network of faculty, administrators, and students at Vanderbilt University that seeks to facilitate the awareness and use of the many programs that can help students become productive and well-rounded scholars. The network's website (*vanderbilt.edu/gradschool/gdn*) provides links to various offices and groups at Vanderbilt that support graduate student development. These offices and organizations also jointly sponsor a number of seminars, workshops, and similar events that support student development.

### Bishop Joseph Johnson Black Cultural Center

The Bishop Joseph Johnson Black Cultural Center (BJJBCC) represents one of Vanderbilt University's numerous efforts at acknowledging and promoting diversity. It does so by providing educational and cultural programming on the black experience for the entire Vanderbilt community. Dedicated in 1984, the center is named for the first African American student admitted to Vanderbilt University in 1953, Bishop Joseph Johnson (B.D. '54, Ph.D. '58).

One of the center's aims is to provide cultural programming. It sponsors lectures, musical performances, art exhibitions, films, and discussions on African and African American history and culture. The center also provides an office space for a scholarly journal, the *Afro-Hispanic Review*, edited by Vanderbilt faculty and graduate students.

Another of the center's aims is student support and development. The center provides meeting spaces for numerous Vanderbilt student groups, including the Black Student Alliance, Every Nation Campus Ministries, and Vanderbilt Spoken Word. The center works with students on a wide range of campus projects and community service opportunities. The center also serves as an informal haven for students, with plenty of opportunities for fellowship and food.

One additional aim of the center is community outreach and service. To this end, the center reaches out to civic and cultural groups. The BJJBCC facilitates tutoring and mentoring activities for young people from the Metro Nashville Public Schools, the YMCA, and other community agencies. VU students serve as tutors and mentors to young people in the Edgehill community. The center also helps promote student recruitment by hosting various pre-college groups.

The center houses a computer lab, a small library, a seminar room, an auditorium, a student lounge area, and staff offices. The center is open to all Vanderbilt students, faculty, and staff for programs and gatherings.

### **International Student and Scholar Services**

International Student and Scholar Services (ISSS), located in the Student Life Center, fosters the education and development of nonimmigrant students and scholars to enable them to achieve their academic and professional goals and objectives. ISSS provides advice, counseling, and advocacy regarding immigration, cross-cultural, and personal matters. ISSS supports an environment conducive to international education and intercultural awareness via educational, social, and cross-cultural programs.

ISSS provides immigration advising and services, including the processing of immigration paperwork, to more than 1,500 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 Department of Homeland Security (Bureau of Citizenship and Immigration Services) and the Department of State. ISSS coordinates biannual orientation programs for students and ongoing orientations for scholars, who arrive throughout the year.

To help promote connection between international students and the greater Nashville community, ISSS coordinates the First Friends program, which matches international students with Americans both on and off campus for friendship and cross-cultural exchange. The weekly World on Wednesday presentations inform, broaden perspectives, and facilitate cross-cultural understanding through discussions led by students, faculty, and staff. International Education Week in the fall provides the campus with additional opportunities to learn about world cultures and to celebrate diversity. International Lens film series brings more than fifty international films to campus each year. ISSS provides a range of programs and activities throughout the year to address a variety of international student needs and interests. These programs include Vanderbilt International Volunteers and a selection of holiday parties. Southern Culture Series is an opportunity for students to experience Southern culture in nearby cities such as Memphis, Chattanooga, and Atlanta.

### Margaret Cuninggim Women's Center

As part of the Office of the Dean of Students, the Margaret Cuninggim Women's Center welcomes all members of the Vanderbilt community to take part in our events and resources related to women's and gender topics. Our Gender Matters program offers co-curricular programming aimed to increase awareness of the influence that gender has in our lives; in addition, Gender Matters provides individual support and advocacy around a variety of issues, including gender stereotyping, gender equity, students with children, body image,

eating disorders, pregnancy and reproduction, sexual health, and more. Project Safe is a support and resource referral hub for those affected by power-based personal violence (sexual assault, partner violence, stalking, and bias-related violence). Through the Green Dot violence prevention campaign, we also coordinate a campus-wide effort to involve all members of the Vanderbilt community in creating a safer campus. The Women's Center is open Monday through Friday, 8 a.m. to 5 p.m. and is located at 316 West Side Row. For more information, please call (615) 322-4843.

### Office of LGBTQI Life

As a component of Vanderbilt's Office of the Dean of Students, the Lesbian, Gay, Bisexual, Transgender, Queer, and Intersex (LGBTQI) 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. Visitors are invited to use our DVD library for resources around LGBTQI issues and culture. In addition, LGBTQI Life conducts tailored trainings and consultations for the campus and community and coordinates the Safe Zone Ally program. In all cases the office staff provides confidentiality. The Office of LGBTQI Life is located in the K. C. Potter Center, Euclid House, 312 West Side Row. For more information, please call (615) 322-3330.

### 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.

# **Religious Life**

The Office of Religious Life provides opportunities for students, faculty, and staff to explore religion, faith, spirituality, personal values, and social responsibility via educational programming, religious and spiritual praxis, encounters with various faith perspectives, and engagement with religious and spiritual communities. The office serves "the religious" and those who identify as "nonreligious." Religious Life is an intellectual home and ethical resource for anyone in the Vanderbilt community seeking to clarify, explore, and deepen understanding of their lives.

Recognizing the importance of exploring one's faith in community, the Office of Religious Life facilitates opportunities for individuals of a shared faith to gather and engage in the rites, rituals, and practices of 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*.

# **Extracurricular Activities**

### Sarratt Student Center/Rand Hall

Sarratt Student Center (*vanderbilt.edu/sarratt*), named for former mathematics professor and dean of students Madison Sarratt, provides a variety of facilities, programs, and activities. The center houses a 300-seat cinema, an art gallery, art studios, a multicultural space, rehearsal rooms, large lounge spaces, large and small meeting spaces, and a courtyard. The facility is also home to the Commodore Card office, Vanderbilt Student Communications, the radio station, the television station, the Last Drop Coffee Shop, and The Pub at Overcup Oak restaurant.

Connected to Sarratt Student Center is Rand Hall which houses Rand Dining Center, a campus store, student-operated businesses, The Anchor (student organization space), a multipurpose venue, meeting and seminar rooms, and a large open lounge space.

The Vanderbilt Programing Board plans concerts, films, classes, speakers, receptions, gallery showings, and many other events throughout campus. The facilities information desk serves as a Ticketmaster™ outlet, handling ticket sales for most of the university's and Nashville's cultural events. The Dean of Students, Greek Life, Leadership, and Office of Active Citizenship and Service are located in Sarratt Student Center/Rand Hall.

# **Student Life Center**

The Vanderbilt Student Life Center (*vanderbilt.edu/ studentlifecenter*) is the university's community keystone. It is both the fulfillment of students' vision to have a large social space on campus and a wonderful complement to Sarratt Student Center.

The Student Life Center has more than 18,000 square feet of event and meeting-room space. The 9,000-square-foot Commodore Ballroom is one of the more popular spaces to have events on campus.

The center is also home to the Center for Student Professional Development, International Student and Scholar Services, the Health Professions Advisory Office, the Office of Honor Scholarships, the Office of International Services, and the Global Education Office.

# **Recreation and Sports**

Graduate and professional students are encouraged to participate in the many physical activity classes, intramurals, and sport clubs offered by the university. All students pay a mandatory recreation fee which supports facilities, fields, and programs (see the chapter on Financial Information). Spouses must also pay a fee to use the facilities.

Physical activity classes offered include racquetball, fly fishing, and lifeguarding/CPR/first aid, along with rock climbing and kayaking. Forty sport clubs provide opportunity for participation in such favorites as sailing, fencing, rugby, and various martial arts.

The university recreation facilities include gymnasiums, tracks, and four softball diamonds. The four lighted multipurpose playing fields are irrigated and maintained to assure prime field conditions.

The Student Recreation Center houses a 36 meter x 25 yard swimming pool; three courts for basketball, volleyball, and badminton; six racquetball and two squash courts; a weight and fitness room; a wood-floor activity room; a rock-climbing wall; an indoor track; a mat room; locker rooms; and a Wellness Center. Lighted outside basketball and sand volleyball courts and an outdoor recreation facility complement the center.

For additional information, visit vanderbilt.edu/campusrecreation.

# Medical Education at Vanderbilt

HE Vanderbilt University School of Medicine seeks to administer a four-year educational program toward the M.D. degree that provides students with the knowledge, skills, attitudes, and habits they will need to practice safe, effective, ethical, evidence-based, and patient-centered medicine in the 21st century. It is grounded in the principle that the health of populations can and should be related to the education of health professionals and is aligned with Vanderbilt's overarching mission to produce leaders and scholars in medicine.

The following topics receive special emphasis in our curriculum: professionalism, cultural competence, communication skills, evidence-based medicine, information technology, interdisciplinary teamwork, lifelong learning, and patient-centered care. These topics run as longitudinal themes throughout the four years of the curriculum.

The medical school's major strength lies in the quality of its students and faculty. The school provides a supportive, positive environment in which students are treated individually in their pursuit of excellence in medical careers. The student body is diverse, with students from a wide variety of major universities nationwide. The medical school has an unusually low attrition rate and its graduates traditionally gain entrance to residency programs of high quality throughout the country.

The faculty, which represents a variety of specialties and many strong research programs, has a national and international reputation for excellence in the biomedical sciences and clinical care. House staff officers who have teaching duties consistently receive commendation for their contribution to the educational program.

Through its core and elective components, the curriculum provides students opportunities to explore the full spectrum of medicine. There is enough structure to ensure consistency and enough flexibility to permit the pursuit of individual interests.

From the 5,000 applications received each year at the School of Medicine, approximately a hundred students matriculate into the first-year class. A hallmark of the School of Medicine admissions process is the personal attention to detail exercised by the administrative staff and the Admissions Committee. The involvement of more than a hundred faculty members in the interview and evaluation process reflects the importance placed on the selection process and leads to a personal interest in each applicant. An important part of the admissions process is the applicant's tour of the medical school facilities with a member of the student body as a guide.

The school seeks to attract qualified minority and disadvantaged students. This goal is based not only on a commitment to equal opportunity, but also on the belief that a diverse student population provides the best learning environment for all students.

Medical school is but the beginning of a continuing process. Following graduation from medical school, residency provides a period of further formal training in specialized areas of medicine. For the physician who aspires to a career in academic medicine, additional fellowship training in research is usually needed. The Vanderbilt program in medical education provides a sound basis for the physician graduate to enter any field of medicine. Vanderbilt's commitment to medical education as a lifelong pursuit is supported by programs of

continuing education offered to alumni and to physicians practicing locally as well as those practicing in other parts of the country.

### Mission of the School

The mission of Vanderbilt University School of Medicine is to improve human health. To achieve this goal, we will:

- Prepare physicians, scientists, and educators for positions of worldwide leadership.
- Discover and disseminate new knowledge that advances understanding of health and disease.
- Provide compassionate, personalized patient care of the highest quality in service to our local, national, and global communities.
- Embrace a culture of lifelong learning, innovation, and continuous improvement.
- Create a diverse and broadly inclusive community of faculty, staff, and students that enriches our learning environment and ensures excellence in research and patient care.
- Nurture and protect Vanderbilt's unique legacy of cooperation, collegiality, and mutual respect.
- Foster the personal and professional growth of all members of the Vanderbilt community, as we continuously strive to realize full potential.

# Education

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 for the practicing physician. The faculty seeks to provide students with the attitudes and background, based on sound biomedical science and the core values of the medical profession, to continue their education lifelong. At Vanderbilt, every medical student has access to examples of the highest standards of biomedical investigation and compassionate clinical practice. The desired end is a graduate who has been challenged and stimulated in as many areas of medicine as are feasible within the limits of a four-year course of study.

### Patient Care

A teaching hospital and its associated outpatient facilities constitute a classroom for trainees based on high academic standards. The clinical facility also serves as a laboratory for clinical research. Faculty members, serving as role models for young physicians, teach the practice of exemplary patient care at all levels. Model programs of health care delivery, at primary, secondary, and tertiary levels, fulfill the school's responsibility for community service in its fullest context.

### Research

In addition to teaching, members of the medical school faculty have a second and complementary responsibility to generate new knowledge through research. Exposure to an inquiring

faculty sparks the spirit of inquiry in students. At Vanderbilt, research encompasses basic scientific questions, issues in clinical care, problems 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.

### **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 as physicians-in-training. 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 profession, students pledge to conduct themselves with honor and integrity at all times. Both the Promotions Committees and Honor Council serve to protect the environment of trust created by this Honor System. The Promotions Committees periodically evaluate each student's performance with special attention to work and conduct appropriate for the practice of medicine. The Honor Council serves to educate the student body about their responsibilities 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 Promotions Committee, as the Committee may examine these incidents in the larger context of a student's general performance.

# **The Honor Code**

All students pledge to conduct themselves honorably, professionally, and respectfully in all realms of the Medical Center and in all 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 preapproved by the course director and made readily available to all other students taking the course. This pledge applies to all course work, examinations, and presentations, or any other activities required for the awarding of the M.D. degree. 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 of the Honor Council

### 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.
- To forward to the deanof the School of Medicine appropriate penalties for the quilty.

# 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 chair of the Honor Council whether there is sufficient evidence to proceed with a trial after a formal investigation has been carried out
- The first, second, third, and fourth year classes shall elect two representatives to the Honor Council. These representatives may hold additional offices in the class.
- The vice president of the fourth year class shall be chair of the Honor Council. He or she will appoint the secretary of the Honor Council from among the eight elected representatives.

### Article IV—Duties of Officers

- 1. It shall be the duty of the chair 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 his or her office.
- The secretary shall keep full minutes of all meetings and full proceedings of all hearings, which must be kept in permanent files. The secretary shall notify all members of all hearings, meetings, and retreats and shall perform any other related duties.

# Article V—Meetings

- One regular meeting shall be held within four weeks of the start of the school year. At this meeting, the chair 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 chair at any time and must be called within ten (10) 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.
- 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*

Five members of the Council of nine shall constitute a quorum.

# Article VII—Hearings

- 1. A hearing shall be called by the chair 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 and any member present at the hearing is not at liberty to discuss them 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. 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 a standard of proof "beyond a reasonable doubt." The chair has a vote in all decisions unless contraindicated by Roberts Rules of Order.
- 7. Written notice of the 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 chair. The Promotions Committee will not be notified unless a verdict of "guilty" has been found. In the case of a "guilty" verdict, the Promotions Committee will receive a written summary of the proceedings. The written summary also will be kept in the permanent records of the Honor Council.
- 8. 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.

# 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.
- At the commencement of each academic year, all students shall reaffirm their commitment to the Honor System by signing the Honor Code
- 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.
- 4. All written examinations will include a blank space where students will be required to freehand write the statement, "I continue to abide by the Honor Code." The student must sign below the statement. All written examinations must contain the student's written statement and signature to be considered complete.

#### 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 the chair of the Honor Council, or
  - B. By way of the faculty adviser who will notify the chair of the Honor Council, or
  - C. To any member of the Honor Council, who will report directly and only to either the chair 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 of an incident is a breach of the Honor Code and is subject to punishment.
- 5. Once an incident has been reported, the chair and the faculty adviser will meet to discuss the incident. The chair shall appoint a committee of two members from the Honor Council to investigate the case and report its findings to the faculty adviser and the chair. These two members shall be ineligible to vote. At the conclusion of the investigation, the chair 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 chair, and a hearing will be held by the Honor Council.
- 7. A student who reports a personal Honor Code violation will be given consideration for his/her initiative in reporting his/her own transgression. The chair, with advice of the faculty adviser, will decide if an investigation is warranted.

# Article II—Penalties

- 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 or 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 the Vanderbilt University School of Medicine.
- 3. 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 appeals 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.
- The Summer Council will be composed of the representatives of the rising second- through fourth-year classes as designated. The eighth and ninth members will be appointed by the faculty adviser from the rising student body.
- In the event that a designated member will not be in Nashville during the summer, then the respective class president should appoint a member of his or her class, who will be in Nashville, to be approved by the Honor Council,.
- In the event that the designated chair will not be in Nashville during the summer, then the faculty adviser should recommend a chair from the members of the Summer Council subject to council approval.

# Standards of Behavior for Interactions with Medical Students<sup>1</sup>

### Statement of Standards

In practice, physicians are held to high standards of professionalism and patient care. The medical 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, and between each student and his or her fellow students.<sup>2</sup> 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 which 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.
- <sup>1</sup> All Vanderbilt University policies concerning medical student interactions with faculty and staff as set forth in the Vanderbilt University Student Handbook, the Faculty Manual, and the Staff Manual remain in full force and effect.
- <sup>2</sup> By their express terms, these Standards apply only to interactions which involve one or more medical students; however, it is hoped that these Standards will serve as a guide to all members of the Vanderbilt University Medical Center community. The reporting procedure outlined herein shall apply only to allegations of the violation of these Standards in interactions involving medical student(s).

### Comments

The following delineates more clearly the behavior enumerated above which 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:
  - 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 and merit.
- (2) Discrimination and harassment may include:
  - a. Denying the opportunity for training or rewards because of a student's age, race, religious affiliation, or any other attribute of the student other than merit or performance;
  - b. Unreasonable and inappropriate conduct directed towards any person which is intended to insult or stigmatize that person;
  - 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;
  - e. 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); or
  - f. Grading or evaluating a student based upon any attribute of a student other than that student's perfor mance and merit;
  - g. Any physical mistreatment, such as hitting, slapping or kicking, or threatening such physical mistreatment;
  - h. Requiring a student to perform menial tasks with the intent to humiliate the student.

Any perceived violation of these Standards of Behavior ("Standards") may 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.

### Reporting Procedure

When a student feels that he or she has been mistreated, the student is encouraged to report the incident to the medical school's ombudsman. The ombudsman is introduced to the students during orientation and is not a member of the administration, nor a director of a major medical school course. He works closely with Vanderbilt's Equal Opportunity, Affirmative Action, and Disabilities Services (EAD) office to handle all reported incidents of mistreatment. The ombudsman carefully reviews each incident with the student and develops an action plan accordingly. Students are fully protected from retribution in all cases. The ombudsman has the full support of the medical school administration in handling these delicate matters.

### **Competencies for Learners across the Continuum**

The following set of core competencies was adopted by the Undergraduate Medical Education Committee in 2009 and updated in July 2012. 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.
- ICS<sub>3</sub>. Explain the elements of a validated provider-patient 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 healthcare 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, healthcare organizations, and society; demonstrate these in one's own leadership roles.
- SBP7. Describe how public health and health policy shape the nature of our healthcare 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 healthcare microsystems, and propose interventions that will improve quality, safety and cost-effectiveness.

### The Colleges

Becoming a physician in the 21st century requires having dedication, a strong sense of purpose, a love of science, an interest in taking care of people, and high levels of motivation. In order to survive, and ideally thrive, in medical school, students must be able to adapt quickly to a learning environment with many teachers, numerous clinical training sites, and long hours, all of which sometimes prevent students from maintaining the proper balance necessary for their overall mental and physical health. In addition to the daily coping required to succeed in medical school, students are also faced with the enormous challenge of choosing a specialty from among the more than 110 available to them. With these continued stresses due to both immediate demands and the process of making a major life decision of specialty choice, it is easy for the medical school experience to become overwhelming. The Colleges at Vanderbilt are designed to support students along

the way such that they adapt successfully to medical school and make decisions for themselves that will give them long-term happiness.

Additionally, the students participate in a course called "The College Colloquium" during their pre-clinical training. In this course, the students will learn about medical humanities, ethics, professionalism, leadership, service, and a range of other topics, all within a small group setting.

Upon matriculation into the medical school, students in the regular M.D. program are assigned to one of the four Colleges, each of which is led by two College Mentors. The Colleges are composed of students in all four years of medical school, as well as affiliated faculty advisers from a broad range of specialties. Additionally, senior students who have a strong interest in mentoring students in the pre-clinical years are invited to participate in the activities of the Colleges. Students in the Medical Scientist Training Program have an additional advisery system that provides support and addresses issues and concerns related to their training in the M.D./Ph.D. program.

#### **Advisers**

The Vanderbilt School of Medicine has one of the lowest attrition rates in the country. The faculty and administration take an active interest in assuring that each student achieves to maximum capability. Advisers, both student and faculty, and staff members of the Office of the Dean are available to assist students toward successful development of their plans.

# 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. 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 two programs: the Program in Human Simulations and the Simulation Technologies Programs. The first program 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 programs provide both unique and integrated approaches to training our medical students in a safe and effective educational environment.

# **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 almost 1,000 house staff in more than 80 accredited residency and fellowship programs.

### **Residency Training**

Students 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.

# **Continuing Medical Education**

Vanderbilt University School of Medicine and Vanderbilt University Medical Center recognize a major commitment to the continuing education 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. CME activities at Vanderbilt are designed to help physicians and

other members of the health care team provide the very best possible care to their patients and perform optimally in their other professional responsibilities. Accredited by the Accreditation Council for CME, the School of Medicine offers a broad spectrum of CME activities throughout the year to meet the learning needs of health care teams in practice. Individual activities are planned and offered by departments and divisions of the school. Inquiries about accreditation should be directed to the Division of Continuing Medical Education or to departments and divisions about specific programming.

# **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."

Rudolph A. Light Hall, completed in 1977, is a sophisticated facility for medical education and other student activities. The seven-story structure contains 209,000 square feet of space housing the latest in laboratory equipment, audio-visual and electronic teaching tools, and multi-purpose classroom space. The second-floor student lounge is designed to foster medical student interaction and to permit informal educational experiences—leading to the development of physicians grounded in the sciences but enlightened by humanitarian interests and understanding.

Beginning in 1996, several new degree programs became a part of the School of Medicine. These programs include courses of study in public health (1996), clinical investigation (2000), audiology (2002), medical physics (2002), laboratory investigation (2004), education of the deaf (2006), speech-language pathology (2007), and health professions education (2010).

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# Admission

Doctor of Medicine (M.D.)

### **Requirements for Entrance**

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

Applicants must present evidence of having satisfactorily completed all of the minimum requirements listed below by the completion of the fall semester of the application year. A semester hour is the credit value of sixteen weeks of work consisting of one hour of lecture or recitation or at least two hours of laboratory.

*Biology*. Eight semester hours, including laboratory, in either general biology, zoology, or molecular biology.

*Chemistry.* A minimum of 16 semester hours, 8 in general inorganic chemistry, including laboratory, and 8 in organic chemistry.

While a year of inorganic chemistry is designated, Vanderbilt will accept the additional 8 hours with lab in an upper level chemistry course(s) other than organic, especially if the student has placed out of the entry level course.

*English and Composition.* Six semester hours.

Physics. Eight semester hours, including laboratory.
Advanced placement credits, CLEP credits, and pass/

fail credits are not acceptable in lieu of any requirements. Advanced courses in the same discipline may be substituted for the traditional requirements when the applicant has placed out of the entry level course.

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 will ordinarily have the broad preliminary preparation to enter postgraduate medical education in any of the diverse specialties of medicine. All candidates for admission must possess sufficient intellectual ability, emotional stability, and sensory and motor function to meet the academic requirements of the School of Medicine without fundamental alteration in the nature of this program. The associate dean for admissions, in consultation with the Admissions Committee of the School of Medicine, is responsible for interpreting these technical standards as they might apply to an individual applicant to the School 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.

# **Selection Factors**

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 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 preference, socioeconomic background, geographic origin), and participation in extracurricular activities. A criminal background check is required before matriculation.

# **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 will delay review of the application until scores are received.

### Application Procedure for Admission

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 *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 Admissions Committee evaluates the initial application received through the application service. Applicants receiving a favorable initial review are invited to submit letters of recommendation and the secondary application. The Interview Admissions Committee evaluates the application materials to decide which applicants will be invited for an interview. Interviews are conducted at Vanderbilt between September and February. The Executive Admissions Committee evaluates the application materials and interview reports to decide which applicants will be invited to join the entering class. Invitations are offered on a rolling basis from October to March.

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 has ten dual degree programs. For all dual degrees, except the M.D./Ph.D., the first three years are spent in the medical school program. In most cases, after year three, 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. Application is made to each program separately, and admission to both programs is required to enter a dual degree program.

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 will be reviewed by the MSTP admissions committee.

#### **Transfer Students**

Due to Curriculum 2.0, transfer applicants will enter at the beginning of Vanderbilt's second year, but must have completed their second year and be in good standing at an LCME-accredited U.S. or Canadian medical school. Opportunities for transfer are rare because of Vanderbilt's low attrition rate. For information regarding transferring to Vanderbilt, please contact the Office of Enrollment Services at (615) 322-2145 or mdadmissions@vanderbilt.edu.

# Dual Degree Programs

# **Medical Scientist Training Program**

The central goal of the Medical Scientist Training Program (MSTP) at Vanderbilt University is to train leaders in academic medicine. Our program is based on solid clinical and research training and is designed to foster 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 students come from a diverse applicant pool drawn from throughout the nation and abroad.

### MSTP Curriculum

The MSTP is a joint 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 Ph.D. degrees. The MSTP allows both joint and alternating enrollment in the School of Medicine and the Graduate School.

The cornerstone of the Vanderbilt MSTP is training in scientific inquiry afforded by a rigorous Ph.D. experience. MSTP trainees usually complete the first two years of the medical curriculum prior to the initiation of research training.

Following completion of three laboratory rotations, trainees select a laboratory and department for graduate studies. This selection is formalized before the end of the second year of medical school. Requirements for successful completion of the Ph.D. degree are the same for all students at Vanderbilt. The Ph.D. thesis must be successfully defended prior to reentry into medical school.

Most MSTP students will begin the third year of medical school in early July with the rest of the rising third-year class. In special circumstances, MSTP students may begin their third-year studies between July and December coinciding with the beginning of a clinical clerkship. Students beginning the M3 year in early July can participate fully in the medical school elective program, including additional research, during the fourth year. Those beginning later must use elective time in the M4 year to complete the required M3 clinical clerkships.

To facilitate the training of clinical investigators, we developed a distinct track within the Vanderbilt MSTP called the MSTP-Clinical Investigation Track (MSTP-CIT). 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.

# MSTP Program Activities

There are a number of educational programs developed specifically for the training of physician scientists in the MSTP. A brief summary of the major activities follows.

Annual Retreat. The MSTP curriculum begins each year with a day-long retreat scheduled during the week that new students arrive on campus. The retreat provides an opportunity for interactions among MSTP students and faculty with a focus on cutting-edge science. Presentations are made by all students in the graduate phase of training.

Seminar Series. The MSTP Seminar Series is a student-driven, literature-based course in critical thinking guided by three faculty preceptors. The weekly seminar series is interdisciplinary in scope, with topics drawn from all areas of biomedicine. Students select the manuscripts to be presented as centerpieces of the seminars.

Clinical Preceptorship Program. The MSTP Clinical Preceptorship Program provides our students with exposure to clinical medicine during the period of research training. Each class is assigned two clinical mentors, an internist and a pediatrician, who work with the class for the duration of their graduate training. One half of the class works with the internist in the fall semester and the other works with the pediatrician, switching mentors for the spring semester.

Data Club. The MSTP Data Club provides a forum for students to discuss current research. All are invited to attend the monthly meetings, but the Data Club is particularly designed for graduate-phase MSTP students.

Leadership Workshop. The MSTP Leadership Workshop provides formal training in leadership. The main objectives are to offer students an opportunity to assess their individual leadership styles, discuss cases in research and clinical leadership, and receive didactic instruction in core leadership competencies. The workshop is held biennially in even-numbered years.

Career Development Workshop. The MSTP Career Development Workshop provides formal exposure to the variety of career paths chosen by physician scientists. The main focus of the workshop is on the interval from MSTP graduation to the completion of clinical and research training. Panel discussions focus on career options for physician scientists, the transition to independence, and work-family balance. The workshop is held biennially in odd-numbered years.

Physician Scientist Speaker Series. The Physician Scientist Speaker Series offers an opportunity for students to interact with renowned physician scientists who serve as excellent resources and role models. Speakers are invited by the students each semester to present a research seminar to the Vanderbilt community and give an after-dinner talk to the MSTP class.

Community Outreach. MSTP students direct the annual "Mini-MSTP" for local public school students to promote interest in developing physician scientist careers. Participants are exposed to clinical and research challenges that duplicate real-life events in the hospital and the laboratory. Mini-MSTP events included a visit to the Center for Experiential Learning and Assessment for an encounter with simulation technology, laboratory experiments, and interaction with MSTP students.

Advising Colleges. The Vanderbilt MSTP is organized into six advising colleges that serve as the primary advising mechanism for students in the program. Each advising college is led by two faculty members and includes one or two members of

School of Medicine / Admission 35

each class across all years of the MSTP. We also include 3 to 4 M.D./Ph.D. resident advisers in each college.

Student Advisory Committee (SAC). The MSTP SAC is appointed annually by the students to provide advice to the MSTP Leadership Team about all aspects of program administration and curriculum. Two-to-three students from each class serve for two-year terms on the SAC. The SAC has been instrumental in MSTP student recruitment and development of several new curricular programs for the MSTP.

### Financial Support

Funding for tuition and stipend is available for those who gain admission to the Medical Scientist Training Program. A training grant from the NIH supports about twenty-five percent of the expenses for the MSTP; the remainder comes from the Dean's Office, basic science and clinical departments, and philanthropy.

# Other Dual Degree Programs

#### 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. degree.

Ideally, students will apply for joint degree status before enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the medical school. Law students who apply to the medical school during their first year in the law program may also be considered for the joint degree.

Joint degree students will complete both degrees in six years, saving one year in school, as medical school ordinarily takes four years and law school takes three.

# M.D./M.S. in Biomedical Engineering

Students must apply separately to both the Vanderbilt University School of Medicine and the Department of Biomedical Engineering in the Vanderbilt University School of Engineering and be accepted by both programs to pursue the joint M.D./M.S. in biomedical engineering degree.

Ideally, students will apply for joint degree status before enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the medical school.

Joint degree students will complete both degrees in five years, saving one year in school, since ordinarily medical school takes four years and the M.S. in biomedical engineering two years.

### M.D./M.S. in Biomedical Informatics

Students must apply separately to both the Vanderbilt University School of Medicine and Vanderbilt's Biomedical Informatics Department and must be accepted by both programs to pursue the joint M.D./M.S. in biomedical informatics degree.

Ideally, students will apply for joint degree status prior to enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the medical school.

Joint degree students will complete both degrees in six years, saving one-half year in school, since medical school ordinarily takes four years and the M.S. in biomedical informatics two and one-half years.

### M.D./M.Div. and M.D./M.T.S.

Students with interest in medical and divinity degrees will have the opportunity to enroll in one of two joint 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) degree.

Ideally, students will apply for joint degree status before enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the medical school. Divinity students who apply to the medical school during their first year in the divinity program may also be considered for the joint degree.

The M.D./M.Div. joint degree program will take a total of six years for completion. This saves one year as the M.D. degree ordinarily takes four years and the Master of Divinity takes three. 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 will carry 15 credit hours per semester while in the Divinity School.

### M.D./M.S. in Computer Science

Students must apply separately to the Vanderbilt University School of Medicine and the Computer Science program in the Vanderbilt School of Engineering and be accepted by both programs to pursue the joint M.D./M.S. in computer science degree. Students must meet requirements of each program for admission.

Ideally, students will apply for joint degree status prior to enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the medical school.

Joint degree students will complete both degrees in five years, saving one year in school, since medical school ordinarily takes four years and the computer science program two years.

### 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. joint 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 joint M.D./M.Ed. degree.

Ideally, students will apply for joint degree status before enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the School of Medicine. Peabody students may apply for admission to the M.D. program during their first year in the master's program.

Joint degree students will complete both degrees in five years, saving on year in school, as medical school ordinarily takes four years and the Peabody program two years.

### M.D./M.P.H.

Students must apply separately to the M.D. and the M.P.H. programs in the School of Medicine and be accepted by both programs to pursue the joint M.D./M.P.H. degree. Medical students may elect to apply for admission to the joint degree program at any time during their first three years in the medical school.

An important component of the M.P.H. program is a mentored research investigation, which assumes a degree of student independence typically associated with fellowship or junior faculty status. Thus, acceptance into the M.P.H. program will be restricted to students who exhibit this capacity and will require pre-identification of a qualified faculty member willing to serve as the student's mentor.

Joint degree students will complete both degrees in five years, saving one year in school, since medical school ordinarily takes four years and the M.P.H. program two years.

### M.D./MBA

Students must apply separately to both the Vanderbilt University School of Medicine and Vanderbilt's Owen Graduate School of Managementand be accepted by both programs to pursue the joint M.D./MBA degree.

Ideally, students will apply for joint degree status prior to enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the medical school. Owen students who apply to the medical school during their first year in the MBA program may also be considered for the joint degree program.

Joint degree students will complete both degrees in five years, saving one year in school, since medical school ordinarily takes four years and the Owen program two 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 will not ensure acceptance to the other.

Dual degree students will be 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 will be allowed to delay graduation until after completion of both degrees, as long as they are officially enrolled in the joint degree program. Requirements for the M.D. degree will be the same as those for non-joint-degree students. In nearly all circumstances, students will be able to complete requirements for both degrees in a total of five years.

# Other Single Degree Programs

Professional Programs in Hearing and Speech Sciences

### **Doctor of Audiology**

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.

The Au.D. program is CAA accredited by the American Speech-Language-Hearing Association. Practicum sites include the Vanderbilt Bill Wilkerson Center, Odess Otolaryngology Clinic, Veterans Affairs Medical Center, and several hospitals and practices in the metropolitan Nashville area. At present, Vanderbilt's Au.D. program is ranked #1 in the nation by U.S. News and World Report.

The Au.D. program encourages applicants with backgrounds in such areas as communication disorders and other health-related professions, biomedical sciences, psychology, and psycholinguistics. 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.

Please visit our website at https://www.mc.vanderbilt.edu/ HSSgraduatestudies for additional information.

### Master of Education of the Deaf

The Department of Hearing and Speech Sciences (DHSS) offers a master of education of the deaf (M.D.E.) degree. This one- to two-year program emphasizes the development of spoken language and auditory skills for children who are able to develop those skills. The DHSS is home to a unique, interdisciplinary approach to teacher training by combining training in audiology, speech-language pathology, and deaf education. The Mama Lere Hearing School in our National Center for Childhood Deafness and Family Communication serves as the professional development school for the DHSS deaf education program. This auditory oral 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.

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 in same. The program will be one year in length (three semesters including summer plus Maymester) for those coming in with

School of Medicine / Admission 37

a background in deaf education and two years (five semesters including summer plus Maymester) for those with no background in deaf education.

Please visit our website at www.mc.vanderbilt.edu/nccdfc for additional information.

#### Master of Science (Speech-Language Pathology)

The master's degree program in speech-language pathology (S.L.P.) is administered through the Vanderbilt University School of Medicine and is CAA (Council on Academic Accreditation) accredited by the American Speech-Language-Hearing Association. The program provides clinical education leading to professional certification in speech-language pathology. The 1.5 to 2.0 calendar years (depending on background) covers at least five semesters (48-63 semester hours), including the summer session following the first calendar year of full-time study. Students without a background in communication disorders will require an extra semester. Many clinical opportunities are available throughout the program. The program culminates in a ten-week clinical or research externship at a site of the student's choosing. The program exceeds American Speech-Language-Hearing Association requirements. Cochlear implant, autism courses, and education courses are a part of the curriculum for students with interests in those areas. There is also a thesis option.

Students with backgrounds in such areas as communication disorders and other health related professions, biomedical sciences, psychology, and psycholinguistics are encouraged to apply. 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.

Further information regarding graduate programs in hearing and speech sciences may be found online at https://www.mc.vanderbilt.edu/HSSgraduatestudies.

Professional Programs in Medical Physics

# Doctor of Medical Physics Master of Science in Medical Physics

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 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 development of new instrumentation and technology, the development of 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 now has a growing breadth of involvement throughout medicine. Many medical physicists not only provide clinical service, but also have faculty appointments at universities and colleges and are responsible for teaching future medical physicists, resident physicians, medical students, and hospital technical staff.

Vanderbilt University offers both the master of science in medical physics (M.S.M.P.) and a professional doctorate in medical physics (D.M.P.). These interdisciplinary 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, the Department of Mathematics, and the School of Engineering (Department of Biomedical Engineering).

The M.S.M.P. offers tracks in both radiotherapy medical physics and diagnostic medical physics. The master of science program is a 24-month program.

The D.M.P. program offers tracks in both radiotherapy medical physics and diagnostic medical physics. Degree requirements include 50 didactic credit hours, 6 research credit hours, and 36 hours of clinical training. The didactic and research hours are completed in years one and two, and the clinical training credit hours are completed in years three and four. The clinical medical physics experience gained in years three and four is equivalent to a two-year medical physics residency.

All visiting students and applicants may access this information and more online by visiting our webpages at https://medschool.vanderbilt.edu/msmp or https://medschool.vanderbilt.edu/dmp.

312 CE

## Other Programs

#### **Master of Laboratory Investigation**

The Master of Laboratory Investigation (M.L.I.) program is a three-year program offered by the School of Medicine for Vanderbilt or Meharry staff who have a B.S. or B.A. degree from an accredited institution with a GPA of 2.5, have at least six months of residency at VUMC or Meharry in a research laboratory, and who are nominated by the faculty mentor in whose lab they work with a strong letter of support. The Graduate Record Examination (GRE— no minimum mandatory score) and an interview are required of all applicants.

The mission of the Master of Laboratory Investigation program is to enhance the academic, scientific, and technical expertise of research personnel who will continue to work in an academic research environment; to foster their professional growth; and to improve the career potentials of our brightest and most qualified young researchers who do not wish to pursue a Ph.D.

Please visit our website at https://medschool.vanderbilt.edu/mli/?PROGRAM\_ID=236 for additional information.

#### **Master of Public Health**

The Vanderbilt Master of Public Health (M.P.H.) is an interdisciplinary program to train public health scientists and leaders dedicated to improving the public health and preventing disease and disability. We offer two tracks: Epidemiology and Global Health.

The focus of the Epidemiology track is population-based quantitative evaluation. Thus, it seeks students who have a strong clinical background—generally physicians or other doctoral qualified professionals—and provides them with additional training that fosters their development as public health scientists or professionals. The Epidemiology track is open to physicians who have completed their residency training, or other health care professionals at a comparable level. Normally, applicants will be clinical research fellows or faculty who seek training for a future career in epidemiologic, clinical, or health services research or health administration.

The Global Health track is designed to educate innovative public health leaders to manage global health initiatives and to contribute to public policy that improves global health. The Global Health track is open to a diverse array of individuals who desire to make an impact in global health. Applicants may have a doctoral or other professional degree, or have exceptional qualifications with a bachelor's degree.

A five-year joint M.D./M.P.H. degree is offered for students interested in acquiring tools needed to conceptualize and conduct studies using the methods accepted by the premier medical journals. Students in the joint degree program apply separately to the M.P.H. program and the M.D. program and must demonstrate a level of independence typically associated with fellowship or junior faculty status.

Please visit our website at https://medschool.vanderbilt.edu/mph for additional information.

#### Master of Science in Clinical Investigation

The Master of Science in Clinical Investigation (M.S.C.I.) program trains investigators in the techniques and processes utilized in patient-oriented research. This program provides direct, mentored experience in clinical investigation and, through didactic work, provides trainees with a strong

foundation in study design, biostatistics, biomedical ethics, clinical pharmacology, human genetics, and assay methods. The program typically takes two years to complete. Graduates successfully compete for grants such as the K-23, Clinical Associate Physician Award, R0-1, and major foundation grants.

Eligible candidates for the M.S.C.I. program include:

- board-eligible physicians enrolled in a fellowship program at Vanderbilt or Meharry Medical College
- residents with protected time for research
- Vanderbilt faculty members with the consent of their department chairs
- medical students in the Medical Scholars program
- postdoctoral Ph.D.'s anticipating a career in patientoriented research, and
- Ph.D. candidates in the Nursing School anticipating a career in patient-oriented research.

The M.S.C.I. program consists of four components: *Mentored Research Apprenticeship:* The core of the M.S.C.I. program will be 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 General Clinical Research Center will be encouraged. The research project will account for 80 percent of the candidate's commitment to the program.

Didactic Work: Candidates must complete 31 hours of courses covering the essentials of study design, biostatistics, ethics, drug development, and data analysis. It is expected that course work will comprise 20 percent of the candidate's time commitment. Core courses will be provided in two formats: intense courses that meet three hours each day (e.g., 8:00 a.m. to 11:00 a.m.) for four weeks 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.

Career Path Development: In addition to the formal curriculum, a monthly seminar series, "Clinical Career Seminars," will permit candidates to meet successful patient-oriented researchers. Topics of discussion will include academic "rules of the road," time management, promotion/tenure issues, grants management, and overall program evaluation. Candidates will hone their scientific communication skills through an annual presentation at this forum. The directors will host networking events with the candidates, clinical investigators, mentors, and visiting scientists.

Master's Final Project: The candidate will submit a manuscript to a peer-reviewed journal, provide a completed proposal for a federal or major foundation grant, or develop a master's thesis based on his or her research project. Completion of the thesis requirement will be evaluated by a thesis committee composed of the trainee's mentor, two other members selected by the candidate, and the directors of the M.S.C.I. program.

More information is available online at www.mc.vanderbilt. edu/msci/.

#### **Master of Health Professions Education**

The Master of Health Professions Education (M.H.P.E.) program was approved in spring 2010 with the first cohort

School of Medicine / Admission 39

beginning in fall 2011 and is a unique collaboration among the School of Medicine, School of Nursing, and Peabody College of Education and Human Development. The program follows an Executive MBA weekend format, in which each course meets three weekends per semester with approximately 16 contact hours per weekend. Courses earn between 2 and 4 credit hours, and students enroll in two courses, 6 credit hours, per semester. The School of Medicine awards the degree upon successful completion of the program requirements.

The M.H.P.E. program is designed to help health education professionals develop the necessary skills to lead their educational enterprise through a rapidly changing health sciences environment. The program is founded on the premise that a systematic, scholarly approach is the most effective way to address educational challenges. The mission of the M.H.P.E. is to train educational leaders and scholars who will contribute to the continuous advancement of health professions education and the health professions educator community, including those from medical, nursing, pharmacy, other health sciences, and graduate biomedical schools.

The M.H.P.E. degree program provides a 36-credit-hour curriculum with emphases on:

- Learning and instruction
- Curriculum development
- Continuous quality improvement
- Organizational leadership and innovation
- Research design and analysis

A capstone project is required for graduation. This project may be completed in a small group, in pairs, or individually, depending on its design and the needs of our learners.

More information is available online at *medschool.vander-bilt.edu/mhpe/*.

# 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.

Visiting students may register for coursework 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 Registrar's Office. Failure to apply through this office may result in denial of credit for any elective work.

Students wishing to visit at Vanderbilt School of Medicine should submit a Visiting Student Application through the AAMC Visiting Student Application Service (VSAS) at least eight 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 April 1 and should include a picture, CV, USMLE Step 1 Score, transcript, and the appropriate fees for your VSAS application to be complete. All accepted students must confirm their participation by submitting a non-refundable \$150 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 Registrar's Office on the first day of their

rotation which will include a Bloodborne Pathogen Training Session. Visiting students may not enroll for more than eight weeks of elective work at Vanderbilt without special approval.

#### Meharry Medical Students

The Vanderbilt School of Medicine has an alliance with Meharry Medical College which allows Meharry medical students to take an unlimited number of electives at Vanderbilt, space permitting, at no additional cost. Applications may be submitted through the VSAS application program at *aamc. org/vsas*.

#### Osteopathic Students

Students from osteopathic medical schools may apply to Vanderbilt University School of Medicine through the Visiting Student Program. Applications will be sent to the appropriate course director for review and departmental approval. Osteopathic students are also required to submit a non-refundable processing fee of \$150 upon approval and placement in an elective course. Applications are currently available through the School of Medicine website at medschool.vanderbilt.edu/registrar/osteopathic-students.

#### International Visiting Students

Vanderbilt School of Medicine does not accept students through the Visiting Student Program who are not enrolled in LCME approved medical schools. Faculty sponsorships may be available for qualified students.

# Academic Program and Policies

#### Requirements for the Doctor of Medicine

Candidates for the doctor of medicine must be mature and of good moral character. They must have spent at least four years of study or its equivalent as matriculated medical students at an accredited medical school. Students accepted with advanced standing must complete at least the last two years in the Vanderbilt University School of Medicine. The maximum time for enrollment in required M.D. course work is six years, excluding time spent on an approved leave of absence or in work toward another degree. All M.D. students must:

- Have satisfactorily completed the medical curriculum. Vanderbilt University School of Medicine is in the process of a major curricular revision. During this transition, the specific required courses and programs vary by entering class. Please refer to the following sections for detailed requirements based on year of entry\*:
  - Section A: Entering Class 2010
  - Section B: Entering Class 2011
  - Section C: Entering Class 2012
  - Section D: Entering Class 2013
  - Have taken both Step 1 and Step 2 of the United States Medical Licensing Examination (USMLE), and passed Step 1.
  - Have no outstanding unpaid balances with the university, other than sanctioned educational loans.

\*Any student who exits the M.D. curriculum for approved experiences (research, dual degrees, leave of absence, etc.) will encounter different course options upon return. Requirements for these students will be 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.

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 M.D./Ph.D. programs, and students in the Oral Surgery program when acting as residents. Students enrolled at Vanderbilt University School of Medicine must complete required course work at VUSM or a VUSM affiliate institution, unless otherwise explicitly indicated.

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

# Attendance Policy

- Students will be apprised of the attendance policies for a course on the first day that the class meets. Standards will be provided in writing and in most classes will be 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.
- 4. During the clerkships, students are excused from clinical duties so that they may attend didactic sessions. Students are strongly encouraged to attend unless there is an urgent clinical situation or one that will enrich their education.
- 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 for Mediasite or podcasts due to concerns regarding patient privacy.
- 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.
- 7. 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 and the associate dean for medical student affairs immediately. The student will 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 the standard makeup date (8:00 a.m. on the second Tuesday after scheduled shelf).
- Student attendance may be required at other sessions, as indicated by the course administration.
- 9. 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 in advance if they will be unable to attend a mandatory class session. 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 will not be 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.
- 10. *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. The rules that govern the use of personal days are:
  - Students must notify the course administration in writing and in advance using the appropriate Student Leave Request form. Student Leave Request forms are available online at medschool.vanderbilt.edu/registrar/ forms.
  - Students who anticipate missing a mandatory small group session due to taking a personal day must notify

- their group facilitator/clinical team/classmates in advance that they will not be attending.
- Students will be 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 will be allowed to take up to a total of three (3) personal days (not more than one day per course). In the clerkships, a student may not take more than two (2) personal days from any clerkship.
- 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:
  - Examinations
  - · First day of class
  - Orientation
  - Last day of class before an assessment in a block
  - Other mandatory sessions as determined by course leadership/administration
- 11. 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 will have a negative effect on the student's professionalism evaluation and/or overall grade in the class.

Student Leave Request forms are available online at *medschool. vanderbilt.edu/registrar/forms*. Required information includes the date, time, and reason for the leave request. The signatures of both the block/clerkship/course director and the associate dean for medical student affairs are required.

At the discretion of the senior resident and the attending physician on the ward team, students may occasionally be given time off when working conditions permit. In the event such time off is expected to last longer than 24 hours, a signed Student Leave Request form must be submitted per the instructions above.

#### 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:

- 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.
- 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.

It is also expected that supervising house staff and attending physicians will be 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 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.

# Grading Policy for Vanderbilt School of Medicine

The Vanderbilt University School of Medicine has established a series of learning objectives for its 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. Significant concern in any domain during each required course or clerkship will be brought to the attention of the student as well as the associate dean for medical student affairs early enough to allow sufficient time for remediation. A student for whom major concern persists despite coaching may be given a failing grade (F) for the course despite satisfactory performance in other categories.

#### **Grading scales**

*Pass/Fail.* Final grades of Pass (P), Pass\* (P\*), or Fail (F) will be applied in the following courses:

- All FMK courses (EC 2013 AY 13-14 and EC 2012 fall semester AY13-14)
- Clerkship year (FCC phase) electives
- Select senior-level (Immersion phase) electives
- Research courses in the FMK and FCC phases
- Learning communities

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

- All clerkship year (or FCC phase) courses, with the exception of clerkship electives and research
- Required senior (or Immersion phase) courses
- Continuity Clinical Experience/VPIL after FMK phase

An H grade will be given to students for superior or outstanding achievement in all aspects of course work and all competency domains. Ordinarily, honors grades will be given to no more than 25% of a class.

An HP grade will be given to students with superior achievement in several, but not all, aspects/domains.

A P grade will be given to students who demonstrate satisfactory achievement in all aspects/domains.

A grade of P\* will be given to students whose performance is marginal because of important deficiencies in some aspects of course work or some competency domains. The P\* grade may be applicable for academic credit in an individual course only after approval by the student's Promotions Committee, in light of the student's complete record for the year. Upon receiving such approval, the P\* grade will be recorded on the

official transcript as a P. In the absence of such approval, the P\* grade will be recorded on the official transcript as an F.

An F grade is given for unsatisfactory work resulting in failure. A student receiving an F in any individual competency domain will receive an F for the course or clerkship.

A grade of Incomplete is to be used only to reflect that work has not been completed. It should not be used when work has been completed but at an unsatisfactory level (i.e., work that requires remediation).

#### Clinician Assessments of Student Performance

Faculty and house staff providing primary evaluations of student clinical performance will not recommend letter grades. The evaluation provided by faculty and house staff will provide (1) assessments of the frequency with which each student demonstrates behavior in the various categories subject to evaluation, (2) narrative comments, and (3) an evaluation of suitability for appointment to residency on the service.

# 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 will 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 will be 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 six months after the event. 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 bring the problem, within two weeks of talking with the course director, to the attention of the associate dean for medical student affairs, who will seek to resolve the problem, consulting with the associate dean for undergraduate medical education. If resolution is still not achieved, the associate dean for medical student affairs will make a recommendation to the senior associate dean for health sciences education, who will make the final decision.

# Expectations for Conduct Regarding Examinations and Work Submitted for Academic Credit

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 work submitted for academic credit.
 As stated in the Vanderbilt SOM Honor Code, "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 will be 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 will be published in the course syllabus, and course directors will explain the pertinent points (especially in regards to examinations) verbally as well.
- 3. It is the student's responsibility to be aware of and to adhere to the published guidelines for each course.

# Expectations for Conduct in Clerkship 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 will be 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 can make the appropriate arrangements with staff members in the office of the associate dean for medical student affairs. The staff will notify 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 pencils and erasers, 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
- 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. The test must be turned in to a proctor in your absence, and a student will be escorted by a proctor to the restroom. Additional testing time will not be 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.

#### **VUSM Student Support Programs**

To ensure the academic success of its students, the School of Medicine offers resources to assist students in their transition to the learning environment and in meeting the expectations of medical school. Students are encouraged to take advantage of the many opportunities in addition to regular class activities to enhance learning and performance. The transition to medical school can vary for each individual, and students should not hesitate to seek assistance and support during training.

A variety of activities are available to students for academic support:

- Course self-assessment modules
- Group study
- Optional review sessions
- Student Assistance Program
- · Private Tutoring
- VUSM-Funded Tutoring Program

Faculty members are available for student questions or concerns, and students are encouraged to contact course or clerkship directors as needed. Portfolio coaches, advisory college mentors, and the associate dean for medical student affairs also offer resources for assistance. In addition, the Student Assistance Program offers formal academic assistance to students.

Student Assistance Program. The goal of this program is to provide students with guidance in study skills, test-taking strategies, and general advice for academic success within a rigorous medical school curriculum. Students are introduced to the Student Assistance Program during their first-year orientation and may directly contact the Student Assistance Program director regarding academic concerns.

Private Tutoring. Students who are performing adequately but wish to seek additional assistance through private tutoring (e.g., from upper classmen) are responsible for arranging the services and for payment if necessary for any services rendered.

#### **Other Student Support Programs**

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. At these meetings, the college mentor and student discuss the student's general academic progress, wellness, and early career exploration. In addition to regularly scheduled individual meetings, the college mentors have office hours weekly, 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. College mentors do not make decisions regarding promotion of students from one year to the next.

Portfolio Coaches. Beginning with the entering class of 2013, each student is assigned to a portfolio coach. Students meet with the portfolio coach 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.

Psychological and Counseling Center. The Office of the Dean of Students at Vanderbilt University provides this center, which provides all Vanderbilt students with complete and confidential mental health services. Students experiencing personal difficulties are encouraged to contact the Psychological and Counseling Center on the Vanderbilt campus.

Additionally, a reading and study skills specialist is available to help with time management, test-taking skills, reading skills, and test anxiety reduction.

Associate Dean for Medical Student Affairs. Working closely with the course directors, college mentors, and the directors of the Student Assistance Program, the associate dean for medical student affairs provides academic counseling to students on an as-needed basis. He maintains office hours throughout the week, and students are introduced to him at orientation and have frequent contact with him throughout each year of their training.

# Medical Student Progress and Promotion

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

Decisions on the progress of students during the first two years are ordinarily made at the end of each academic year. In view of the individualized nature of the curriculum in the final two years, no specific decisions on promotion from the third to the fourth year are made. Decisions on the progress of students during these final two years, however, may be made at any time as academic performance may dictate. Ordinarily, decision for graduation will be made shortly before Commencement in the final year.

Please refer to the following sections for the specific promotions policy based on year of entry:

- Section A: Entering Class 2010
- Section B: Entering Class 2011
- Section C: Entering Class 2012
- Section D: Entering Class 2013

# Medical Student Performance Evaluation (Dean's Letter)

The Medical Student Performance Evaluation (MSPE; informally known as the "Dean's Letter") is created as a part of a student's permanent record and is submitted through the ERAS 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 senior associate dean for health sciences education, the associate dean for undergraduate medical education, or the associate dean for diversity to create the MSPE. Students are neither asked nor expected to provide any reason or justification for their choice of MSPE writer.

Students are asked to contact the office of the associate dean for medical student affairs in April of their third year to arrange for an MSPE meeting, or to indicate that an alternate MSPE writer has been chosen. If the latter, the student should then contact the office of the dean chosen to write the MSPE to arrange for an MSPE meeting.

#### 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 that time. Any student unable to participate in a Commencement ceremony will receive his or her diploma by mail.

## Section A

Degree and Promotions Requirements for the Entering Class of 2010 (fourth-year medical students in AY 13–14)

#### Requirements for the M.D.

The requirements described below assume satisfactory completion of all requirements from previous years prior to promotion to the fourth year. Any student who has not completed all prior requirements should have an individual review of his/her schedule with the registrar and associate dean for student affairs to ensure compliance with all requirements for graduation.

#### Fourth Year

The flexibility of the fourth-year curriculum gives the student maximum opportunity for individual development. The year is divided into ten four-week academic sections running from July (section 7) through April (section 4), with January being section 1.

Eight sections (32 weeks of instruction) must be completed. Students may elect, however, to participate in all ten sections. Required fourth-year experiences: Required sections are:

- 1. A primary care medicine experience, which may be satisfied through one of the following options:
  - o Primary Care (PC) Medicine, 520-5100 (at VU)
  - Primary Care (PC) Medicine, 520-5150 (away from VU)\*
- An Immersion Course that has been designated as fulfilling the primary care medicine requirement.
  - 2. Emergency Medicine, 502-5950
- 3. One Immersion Course. The approved list of Immersion Courses for AY 2013–14 will be posted prior to the registration window. Each year certain Immersion Courses are designated as Primary Care Immersion Courses. A student may take a single Primary Care Immersion Course in order to fulfill both the primary care requirement (number 1, above) and the Immersion Course requirement through a single experience.
- 4. One sub-internship. Available sub-internships may be found in YES.
  - 5. Four elective courses must be taken.

Fourth-Year Electives. At least four elective courses must be taken in the fourth year in order to meet the degree requirement of eight sections (months). Students may elect to have course work in all ten sections. Students must keep in mind the following electives limits and recommendations:

- Any deferred clerkships must be completed as described in the original approval.
- Students will not be permitted to take clinical rotations under the supervision of a parent or other relative.

- Students may not enroll in the same elective twice. However, research rotations may last through two months.
   The approval process is required for each month.
- Students are advised to do no more than three clinical rotations in the same specialty. Students may wish to consult with the associate dean for medical student affairs to plan for clinical rotations.
- Students are limited to two rotations away from Vanderbilt (7100—Special Study Clinical and 7150—Special Study Research), and each requires separate approval. In addition, Primary Care may be taken away from Vanderbilt (5150—Primary Care Away from VU), but it must be taken in the U.S.
- Students are limited to two research rotations (6150— Special Study Research, VU or 7150—Special Study Research). MSTP students who receive credit toward their fourth-year curriculum from their Ph.D. work will have exhausted that limit.\*
- MSTP students may receive credit for fourth-year research months if they begin their third year after July. Students should consult the medical school registrar to make these arrangements.
- Students seeking dual degrees at Vanderbilt may receive credit for two fourth-year courses representing work completed in satisfaction of requirements for the second (non-M.D.) degree.

Requests for exceptions to these requirements must be made in writing to the associate dean for medical student affairs.

The normal time frame for completion of required course work for the M.D. is four academic years. The maximum time for enrollment in required M.D. course work is six years, except in unusual circumstances as defined by the Promotions Committees and excluding the time spent on an approved leave of absence or on work toward an additional degree.

#### **Petitions for Primary Care and Special Study Credit**

Petitions for special study must be completed for the following:

- All student-designed course work at Vanderbilt School of Medicine or the VA Hospital
  - o 6100 VU Clinical
  - o 6150 VU Research
- All course work done away from the Vanderbilt University Medical Center or VA Hospital
  - o 7100 Clinical
  - o 7150 Research

A petition form is also used to schedule the Primary Care month during the fourth year. IDIS 5100 is the course number for work within the Nashville Metropolitan Area. IDIS 5150 is for Primary Care rotations outside of Nashville. Primary Care credit can only be received for work within the U.S. All Primary Care forms should be received in the Department of Medicine through Ms. Faapio Poe in MCN D3100. After approval, the course will be added to the schedule by the Registrar's Office approximately 30 days before the start of the rotation month.

Students will develop special study course work or research with the faculty member who will supervise and evaluate their performance. After developing the proposal, a written request (petition form or email), which includes the proposal, month of the rotation and faculty involved, is initiated by the student.

The request is routed through the faculty and the department granting credit to the Registrar's Office. Department approval is required for all research and away petitions. Petition forms and department approval designees are available online at medschool.vanderbilt.edu/registrar.

Students doing special study work at an away location must not only complete the paperwork required by the hosting school, but also complete the necessary paperwork for registration in the course at VUSM. Students must be enrolled in a course for liability insurance to be in effect.

Special study, research, and primary care approval must be received in the Registrar's Office no later than 21 days before the start of the rotation. Credit will not be granted to students for petitions submitted after the 21-day deadline.

# Student Progress and Promotions (for classes entering in 2010, 2011, and 2012)

The dean appoints a Promotions Committee (PC) for each incoming first year class. The PC consists of at least five faculty members who represent a variety of clinical and basic science departments as well as the broad diversity of the VUSM community. Each PC is charged with making decisions or recommendations to the senior associate dean for health sciences education (SADHSE) as specified below regarding promotions of students in its assigned class from one phase to the next; to the SADHSE and dean for dismissal; and to the dean and the executive faculty for graduation.

A quorum of the PC shall consist of at least half of the voting members of a committee; however, any proposed dismissal requires the participation of all voting members. The chair of the committee may determine whether members must be physically present or may participate remotely for any given meeting. The associate dean for medical student affairs, the associate dean for undergraduate medical education, the associate dean for diversity, and the senior associate dean for health sciences education are non-voting ex officio members of each PC. In addition, course directors for the respective phase will attend PC meetings to provide information about the class as a whole and to answer questions that PC members might pose regarding individual students.

The PC recommends for promotion those students who have demonstrated appropriate professional and personal behavior and the knowledge, understanding, and skills consistent with faculty expectations at their particular stage of professional development. The Promotions Committee will review the performance of students with deficiencies and make recommendations concerning their progress.

Any student who has marginal grades in one or more courses in a single academic year, or about whom there is major concern relative to one or more VUSM competency domains (see Competencies for Learners Across the Curriculum—medschool.vanderbilt.edu/competencies), will undergo special review by the Promotions Committee. In light of the student's complete academic record, the committee may recommend promotion, promotion on probation, repetition of all or part of the academic year, or dismissal from the school. While it is recognized that each student's situation represents an individual set of circumstances, the Promotions Committee will apply similar standards and principles throughout their deliberations and decision regarding promotion, probation, or dismissal on a case-by-case basis.

Any student who fails in a course, whether required or elective, will be required to remediate the failure before being

permitted to enter the courses of the next academic year. Credit may be given on the basis of re-examination or satisfactory repetition of the course work, but failures will remain on the record and may be counted as cause for dismissal if additional failure occurs.

Students who are shown by work or conduct to be unfit for the practice of medicine may be dismissed from school at any time.

Academic Probation. Promotions Committees will ordinarily recommend that students be placed on academic probation if their course work includes any failures or is generally of marginal character. Some academic deficiencies will result in mandatory probation. In this regard, any student who receives a failing grade in a School of Medicine course or is requested to repeat an academic year will automatically be placed on probation. Academic probation is generally for one academic year. Probation serves three functions:

- It serves as official documentation that the student is deficient in areas related to academic performance and/ or professionalism.
- 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 will result if a student does not meet stated expectations during the period of probation.

Academic probation will be noted on the student's transcript and will be reported to licensing entities in future graduation verifications.

If a student who is on probation receives a failing or P\* grade in a course or displays a significant breech in professionalism, the Promotions Committee will meet as soon as possible thereafter to consider the situation and render a recommendation regarding dismissal. Ordinarily, a student will be dismissed from school unless there are mitigating circumstances approved by the dean.

A student who has been dismissed from school has the options of appealing the decision or withdrawing from school. To appeal the decision, the student must do so in writing to the executive faculty. A subcommittee will be appointed to consider the appeal, and that body will make a recommendation to the dean concerning dismissal. If it is the decision of the dean that dismissal is warranted, the student is no longer able to choose the option to withdraw.

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 Financial 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 with reapplication.

#### Section B

Degree and Promotions Requirements for the Entering Class of 2011 (third-year medical students in AY 13–14)

#### Requirements for the M.D.

The requirements described below assume satisfactory completion of all requirements from previous years prior to promotion to the third year. Any student who has not completed all prior requirements should have an individual review of his/her schedule with the registrar and associate dean for medical student affairs to ensure compliance with all requirements for graduation.

#### Third Year

Required clinical clerkships include Surgery (8 weeks), Medicine (8 weeks), Pediatrics (6 weeks), Obstetrics-Gynecology (6 weeks), Neurology (4 weeks), and Psychiatry (4 weeks). Registration for third-year clerkships is completed through a lottery process. More information will be available prior to registration.

Ordinarily, students complete all clerkships before proceeding to the senior year, but, under special circumstances, students may defer one or more clerkships to pursue specific research or clinical interests. Information about research training opportunities is available from the Office of Medical Student Research, on the School of Medicine website (medschool.vanderbilt.edu/student-research/). Such plans must be approved by the associate dean for medical student affairs. MSTP students who enter the third year after the first clerkship block may defer one block to the fourth year (with the permission of the MSTP program director and the associate dean for medical student affairs). These students should make every effort to complete all Diagnosis and Therapeutics Course activities during the third year (see below).

Electives. All students are required to take two (2) two-week electives during the clerkship year. 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, with the elective immediately preceding the core clerkship. Electives are graded on a pass/fail basis.

After the close of the drop/add period, addition, with-drawal or change of elective credit status requires the approval of both the instructor involved and the associate dean for medical student affairs. Enrollment in an elective is considered a commitment, and adhering to registrar guidelines for electives is considered a reflection of professional development.

A student may request an exemption from the elective requirement if she/he has a compelling reason for missing the elective time. 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 is not required to complete the elective at a later date. The exempted elective will not appear on the transcript.

Master Clinical Teacher Program. Direct observations by a master clinical teacher (MCT) are required during the third year. 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 year; 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.

Diagnosis and Therapeutics. This required course runs longitudinally throughout the phase, employing both asynchronous online learning and intermittent face-to-face small group sessions to train students to analyze clinical problems. The course begins with a one-week intensive boot camp and continues throughout the FCC phase with a series of online modules and small group meetings. This course aligns with the VC3 framework and is designed to help students assimilate lessons and experiences from across disciplines.

Learning Community sessions are required throughout the third year. The learning communities meet twice during each eight-week clerkship block to discuss ethical issues, work place challenges, and leadership.

#### Fourth Year

The flexibility of the fourth-year curriculum gives the student maximum opportunity for individual development. The year is divided into twelve four-week academic sections running from May (section 5) through April (section 4), with January being section 1.

Nine sections (36 weeks of instruction) must be completed. Students may elect, however, to participate in all twelve sections. Required fourth-year experiences:

- A primary care medicine experience, which may be satisfied through one of the following options:
   a. Primary Care (PC) Medicine, 520-5100 (at VU)
   b. Primary Care (PC) Medicine, 520-5150 (away from VU)
   c. An Immersion Course that has been designated as fulfilling the primary care medicine requirement.
- 2. Emergency Medicine, 502-5950
- 3. One Immersion Course. The approved list of Immersion Courses for AY 2014–15 will be published prior to registration.
- 4. One sub-internship from the approved list published prior to registration.
- 5. Four elective courses must be taken.

Fourth-Year Electives. At least five elective courses must be taken in the fourth year in order to meet the degree requirement of nine sections (months). Students may elect to have course work in all twelve sections. Students must keep in mind the following electives limits and recommendations:

- Any deferred clerkships must be completed as described in the original approval.
- Students will not be permitted to take clinical rotations under the supervision of a parent or other relative.
- Students may not enroll in the same elective twice.
   However, research rotations may last through two months. The approval process is required for each month.
- Students are advised to do no more than three clinical rotations in the same specialty. Students may wish to consult with the associate dean for medical student affairs to plan for clinical rotations.

- Students are limited to two rotations away from Vanderbilt (7100—Special Study Clinical and 7150— Special Study Research), and each requires separate approval. In addition, Primary Care may be taken away from Vanderbilt (5150—Primary Care Away from VU), but it must be taken in the U.S.\*
- Students are limited to two research rotations (6150— Special Study Research, VU or 7150—Special Study Research). MSTP students who receive credit toward their fourth-year curriculum from their Ph.D. work will have exhausted that limit.\*
- MSTP students may receive credit for fourth-year research months if they begin their third year after May. Students should consult the medical school registrar to make these arrangements.
- Students seeking dual degrees at Vanderbilt may receive credit for two fourth-year courses representing work completed in satisfaction of requirements for the second (non-M.D.) degree.

Requests for exceptions to these requirements must be made in writing to the associate dean for medical student affairs.

The normal time frame for completion of required course work for the M.D. is four academic years. The maximum time for enrollment in required M.D. course work is six years, except in unusual circumstances as defined by the Promotions Committees and excluding the time spent on an approved leave of absence or on work toward an additional degree.

#### **Petitions for Primary Care and Special Study Credit**

Petitions for special study must be completed for the following:

- All student designed course work at Vanderbilt School of Medicine or the VA Hospital
  - o 6100 VU Clinical
  - o 6150 VU Research
- All course work done away from the Vanderbilt University Medical Center or VA Hospital
  - o 7100 Clinical
  - o 7150 Research

A petition form is also used to schedule the Primary Care month during the fourth year. IDIS 5100 is the course number for work within the Nashville Metropolitan Area. IDIS 5150 is for Primary Care rotations outside of Nashville. Primary Care credit can only be received for work within the U.S. All Primary Care forms should be received in the Department of Medicine through Ms. Faapio Poe in MCN D3100. After approval, the course will be added to the schedule by the Registrar's Office approximately 30 days before the start of the rotation month.

Students will develop special study course work or research with the faculty member who will supervise and evaluate their performance. After developing the proposal, a written request (petition form or email), which includes the proposal, month of the rotation, and faculty involved, is initiated by the student. The request is routed through the faculty and the department granting credit to the Registrar's Office. Department approval is required for all research and away petitions. Petition forms and department approval designees are available online at medschool.vanderbilt.edu/registrar.

Students doing special study work at an away location must not only complete the paperwork required by the hosting school, but also complete the necessary paperwork for registration in the course at VUSM. Students must be enrolled in a course for liability insurance to be in effect.

Special study, research, and primary care approval must be received in the Registrar's Office no later than 21 days before the start of the rotation. Credit will not be granted to students for petitions submitted after the 21-day deadline.

# Student Progress and Promotions (for classes entering in 2010, 2011, and 2012)

The dean appoints a Promotions Committee (PC) for each incoming first year class. The PC consists of at least five faculty members who represent a variety of clinical and basic science departments as well as the broad diversity of the VUSM community. Each PC is charged with making decisions or recommendations to the senior associate dean for health sciences education (SADHSE) as specified below regarding promotions of students in its assigned class from one phase to the next; to the SADHSE and dean for dismissal; and to the dean and the executive faculty for graduation.

A quorum of the PC shall consist of at least half of the voting members of a committee; however, any proposed dismissal requires the participation of all voting members. The chair of the committee may determine whether members must be physically present or may participate remotely for any given meeting. The associate dean for medical student affairs (ADSA), associate dean for undergraduate medical education, the associate dean for diversity, and the senior associate dean for health sciences education (SADHSE) are non-voting ex officio members of each PC. In addition, course directors for the respective phase will attend PC meetings to provide information about the class as a whole, and to answer questions that PC members might pose regarding individual students.

The PC recommends for promotion those students who have demonstrated appropriate professional and personal behavior and the knowledge, understanding, and skills consistent with faculty expectations at their particular stage of professional development. The Promotions Committee will review the performance of students with deficiencies and make recommendations concerning their progress.

Any student who has marginal grades in one or more courses in a single academic year, or about whom there is major concern relative to one or more VUSM competency domains (see Competencies for Learners Across the Curriculum, medschool. vanderbilt.edu/competencies), will undergo special review by the Promotions Committee. In light of the student's complete academic record, the committee may recommend promotion, promotion on probation, repetition of all or part of the academic year, or dismissal from school. While it is recognized that each student's situation represents an individual set of circumstances, the Promotions Committees will apply similar standards and principles throughout their deliberations and decision regarding promotion, probation, or dismissal on a case-by-case basis.

Any student who fails in a course, whether required or elective, will be required to remedy the failure before being permitted to enter the courses of the next academic year. Credit may be given on the basis of re-examination or satisfactory repetition of the course work, but failures will remain on the record and may be counted as cause for dismissal if additional failure occurs.

Students who are shown by work or conduct to be unfit for the practice of medicine may be dismissed from school at any time.

Academic Probation. Promotions Committees will ordinarily recommend that students be placed on academic probation if their course work includes any failures or is generally of marginal quality. Some academic deficiencies will result in

mandatory probation. In this regard, any student who receives a failing grade in a School of Medicine course or is requested to repeat an academic year will automatically be placed on probation. Academic probation is generally for one academic year. Probation serves three functions:

- It serves as official documentation that the student is deficient in areas related to academic performance and/ or professionalism.
- 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 will result if a student does not meet stated expectations during the period of probation.

Academic probation will be noted on the student's transcript and will be reported to licensing entities in future graduation verifications.

If a student who is on probation receives a failing or P\* grade in a course or displays a significant breech in professionalism, the Promotions Committee will meet as soon as possible thereafter to consider the situation and render a recommendation regarding dismissal. Ordinarily, a student will be dismissed from school unless there are mitigating circumstances approved by the dean.

A student who has been dismissed from school has the options of appealing the decision or withdrawing from school. To appeal the decision, the student must do so in writing to the executive faculty. A subcommittee will be appointed to consider the appeal, and that body will make a recommendation to the dean concerning dismissal. If it is the decision of the dean that dismissal is warranted, the student is no longer able to choose the option to withdraw.

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 Financial 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 with reapplication.

#### Section C

Degree and Promotions Requirements for the Entering Class of 2012 (Hybrid Class in AY 13–14)

#### Requirements for the M.D.

#### LONGITUDINAL REQUIREMENTS

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

#### Clinical Continuity Experience (CCX)

The goal of this required course is to teach students to deliver personalized care for patients within a system of care. Active student engagement in the care team at a single clinical site will compose a major element of this course. Students will have increasing responsibility for systems analysis and improvement as they advance. The course also includes class-room and self-directed learning components that will provide foundational knowledge and skills. Clinic sessions will take place weekly, and students will continue in their clinical sites throughout their four years of training. In an additional component of this course, each student will be assigned a small panel of patients to follow over time and across care settings.

One option within the CCE requirement is the Vanderbilt Program in Interprofesssional Learning (VPIL). Medical students accepted into this program are assigned to working-learning teams with attending providers, medical postgraduate trainees, and students from schools of nursing, pharmacy, and social work. Acknowledging that individual and population health relates not only to biological factors, but also to social, behavioral, economic, cultural, and educational elements, VPIL takes a holistic, systems-based approach to optimize health maintenance and disease management.

# Learning Community: Colloquium, Leadership, and Service Learning

Learning Community course work capitalizes on strong relationships within the Colleges, using small group formats to address key elements of professional development. The Learning Community covers topics such as meta-cognition, medical ethics, medical humanities, and narrative medicine in a discussion-based format. Leadership and service learning will also be components of the Learning Community.

#### Research

Research and scholarship will be addressed over a fouryear curriculum that will introduce students to the role of physician-researcher and will provide education in the skills, knowledge, and attitudes required to succeed in that role. The research courses prepare each student to complete a research clerkship of 3–6 months during the Immersion phase.

#### Core Clinical Curriculum (VC3)

The Vanderbilt Core Clinical Curriculum (VC3) is based upon a set of 25 common presenting complaints. These topics do not encompass all each student is expected to learn; rather, they 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.

#### PHASE-SPECIFIC REQUIREMENTS

#### Foundations of Medical Knowledge Phase (FMK)

This phase of the curriculum (18 months) provides students a strong foundation in the basic sciences, humanities, and behavioral and social sciences that will support 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; Molecular Foundations of Medicine; Structure, Function and Development; Microbiology and Immunology; Disease, Diagnosis, and Therapeutics; Physical Diagnosis; College Colloquium; Patient, Profession, and Society; Research I; and Continuity Clinical Experience I.

#### Foundations of Clinical Care Phase (FCC)

Required clinical clerkships include Surgery (8 weeks), Medicine (8 weeks), Pediatrics (6 weeks), Obstetrics-Gynecology (6 weeks), Neurology (4 weeks), and Psychiatry (4 weeks). Ordinarily students will 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 medical student affairs. 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 MSTP program director and the associate dean for medical student affairs. These students should make every effort to complete all D+T Course (see below) activities during the FCC phase.

*Electives*. All students are required to take two (2) two-week 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, with the elective immediately preceding the core clerkship. Electives are graded on a pass/fail basis. After the close of the drop/add period, addition, withdrawal, or change of elective credit status requires the approval of both the instructor involved and the associate dean for medical student affairs. Enrollment in an elective is considered a commitment, and adhering to registrar guidelines for electives is considered a reflection of professional development.

A student may request an exemption from the elective requirement if she/he has a compelling reason for missing the elective time. 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 whether or not to grant the exemption is made by the ADMSA. If an exemption is granted, the student is not required to complete the elective at a later date. The exempted elective will not appear on the transcript.

Master Clinical Teacher 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 contributes to the clerkship grade.

Diagnosis and Therapeutics. This required course runs longitudinally throughout the phase, employing both asynchronous online learning and intermittent face-to-face small group sessions to train students to analyze clinical problems. The course begins with a one-week intensive boot camp and continues throughout the FCC phase with a series of online modules and small group meetings. This course aligns with the VC3 framework and is designed to help students assimilate lessons and experiences from across disciplines.

The **longitudinal elements** (Continuity Clinical Experience, Learning Community, Research, and VC<sub>3</sub>) continue during the FCC phase.

#### Immersion Phase

The Immersion phase is a highly individualized, 16-month-long 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 eleven one-month blocks over this 16-month period (including the research clerkship, described below). Students must complete a mixture of experiences with varying levels of structured versus workplace learning, including acting internships, integrated inter-disciplinary science courses, advanced clinical experiences, and electives. Requirements for experiences across various care settings (primary care, critical care) ensure a broad preparation.

Because the Immersion phase is intended to be individualized, each student must develop a personalized learning plan that is approved as meeting core requirements per guidelines published at the time of scheduling.

The **longitudinal elements** (Continuity Clinical Experience, Learning Community, and VC<sub>3</sub>) continue during the Immersion phase.

The research clerkship is an intensive three-month scholarly experience that is required to be completed during the Immersion phase. Students may request an extension of the research clerkship up to a total of six months (as a contiguous or non-contiguous block); approval is contingent upon satisfactory progress across all competency domains; decisions regarding such extensions are made by the Promotions Committee.

Student Progress and Promotions (for classes entering in 2010, 2011, and 2012)

#### **Promotions Committee**

The dean appoints a Promotions Committee (PC) for each incoming first year class. The PC consists of at least five faculty members who represent a variety of clinical and basic science departments as well as the broad diversity of the VUSM community. Each PC is charged with making decisions or recommendations to the senior associate dean for health sciences education (SADHSE) as specified below regarding promotions of students in its assigned class from one phase to the next; to the SADHSE and dean for dismissal; and to the dean and the executive faculty for graduation.

A quorum of the PC shall consist of at least half of the voting members of a committee; however, any proposed dismissal requires the participation of all voting members. The Chair of the committee may determine whether members must be physically present or may participate remotely for any given meeting. The associate dean for medical student affairs (ADSA), associate dean for undergraduate medical education, the associate dean for diversity, and the senior associate dean for health sciences education (SADHSE) are non-voting ex officio members of each PC. In addition, course directors for the respective phase will attend PC meetings to provide information about the class as a whole, and to answer questions that PC members might pose regarding individual students.

The PC recommends for promotion those students who have demonstrated appropriate professional and personal behavior and the knowledge, understanding, and skills consistent with faculty expectations at their particular stage of professional development. The Promotions Committee will review the performance of students with deficiencies and make recommendations concerning their progress.

Any student who has marginal grades in one or more courses in a single academic year, or about whom there is major concern relative to one or more VUSM competency domains (see Competencies for Learners Across the Curriculum, medschool.vanderbilt.edu/competencies), will undergo special review by the Promotions Committee. In light of the student's complete academic record, the committee may recommend promotion, promotion on probation, repetition of all or part of the academic year, or dismissal from school. While it is recognized that each student's situation represents an individual set of circumstances, the Promotions Committee will apply similar standards and principles throughout their deliberations and decision regarding promotion, probation, or dismissal on a case-by-case basis.

Any student who fails in a course, whether required or elective, will be required to remediate the failure before being permitted to enter the courses of the next academic year. Credit may be given on the basis of re-examination or satisfactory repetition of the course work, but failures will remain on the record and may be counted as cause for dismissal if additional failure occurs.

Students who are shown by work or conduct to be unfit for the practice of medicine may be dismissed from school at any time.

Prombtiting. Committees will ordinarily recommend that students be placed on academic probation if their course work includes any failures or is generally of marginal quality character. Some academic deficiencies will result in mandatory probation. In this regard, any student who receives a failing grade in a School of Medicine course or is requested to repeat an academic year will automatically be placed on probation. Academic probation is generally for one academic year. Probation serves three functions:

- It serves as official documentation that the student is deficient in areas related to academic performance and/ or professionalism.
- 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 will result if a student does not meet stated expectations during the period of probation.

Academic probation will be noted on the student's transcript and will be reported to licensing entities in future graduation verifications.

If a student who is on probation receives a failing or P\* grade in a course or displays a significant breech in professionalism, the Promotions Committee will meet as soon as possible thereafter to consider the situation and render a recommendation regarding dismissal. Ordinarily, a student will be dismissed from school unless there are mitigating circumstances approved by the dean.

A student who has been dismissed from school has the options of appealing the decision or withdrawing from school. To appeal the decision, the student must do so in writing to

the executive faculty. A subcommittee will be appointed to consider the appeal, and that body will make a recommendation to the dean concerning dismissal. If it is the decision of the dean that dismissal is warranted, the student is no longer able to choose the option to withdraw.

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 Financial 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 with reapplication.

#### Section D

Degree and Promotions Requirements for Entering Class of 2013 (C2.0)

#### Requirements for the M.D.

#### LONGITUDINAL REQUIREMENTS

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

#### Clinical Continuity Experience (CCX)

The goal of this required course is to teach students to deliver personalized care for patients within a system of care. Active student engagement in the care team at a single clinical site will compose a major element of this course. Students will have increasing responsibility for systems analysis and improvement as they advance. The course also includes classroom and self-directed learning components that will provide foundational knowledge and skills. Clinic sessions will take place weekly (Monday, Tuesday, Wednesday, or Thursday afternoons by assigned College), and students will continue in their clinical sites throughout their four years of training. In an additional component of this course, each student will be assigned a small panel of patients to follow over time and across care settings.

One option within the CCX requirement is the Vanderbilt Program in Interprofesssional Learning (VPIL). Medical students accepted into this program are assigned to working-learning teams with attending providers, medical postgraduate trainees, and students from schools of nursing, pharmacy and social work. Acknowledging that individual and population health relates not only to biological factors, but also to social, behavioral, economic, cultural, and educational elements, VPIL takes a holistic, systems-based approach to optimize health maintenance and disease management.

# Learning Community: Colloquium, Leadership, and Service Learning

Learning Community course work capitalizes upon strong relationships within the Colleges, utilizing small group formats to address key elements of professional development. The Learning Community covers topics such as metacognition, medical ethics, medical humanities, and narrative

medicine in a discussion-based format. Leadership and service learning will also be components of the Learning Community.

#### Research

Research and scholarship will be addressed over a fouryear curriculum that will introduce students to the role of physician-researcher and will provide education in the skills, knowledge, and attitudes required to succeed in that role. The research courses in FMK and FCC phases prepare each student to complete a research clerkship of 3–6 months during the Immersion phase.

#### Core Clinical Curriculum (VC3)

The Vanderbilt Core Clinical Curriculum (VC3) is based upon a set of 25 common presenting complaints. These topics do not encompass all 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.

#### **PHASE-SPECIFIC REQUIREMENTS**

#### Foundations of Medical Knowledge Phase (FMK)

This phase of the curriculum (54 weeks) provides students a strong foundation in the basic sciences, humanities, and behavioral and social sciences that will support 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; Microbes and Immunity; Homeostasis; Endocrine, Digestion and Reproduction; Brain, Behavior and Movement; Physical Diagnosis; Learning Community I; Research I; and Continuity Clinical Experience I.

## Foundations of Clinical Care Phase (FCC)

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 will 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 medical student affairs. 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 MSTP program director and the associate dean for medical student affairs. These students should make every effort to complete all D+T Course (see below) activities during the FCC phase.

*Electives*. All students are required to take two (2) two-week 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, with the elective immediately preceding the core clerkship. Electives are graded on a pass/fail basis.

After the close of the drop/add period, addition, with-drawal or change of elective credit status requires the approval of both the instructor involved and the associate dean for medical student affairs. Enrollment in an elective is considered a commitment, and adhering to registrar guidelines for electives is considered a reflection of professional development.

A student may request an exemption from the elective requirement if she/he has a compelling reason for missing the elective time. 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 is not required to complete the elective at a later date. The exempted elective will not appear on the transcript.

Master Clinical Teacher 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.

Diagnosis and Therapeutics. This required course runs longitudinally throughout the phase, employing both asynchronous online learning and intermittent face-to-face small group sessions to train students to analyze clinical problems. The course begins with a one-week intensive boot camp and continues throughout the FCC phase with a series of online modules and small group meetings. This course aligns with the VC3 framework and is designed to help students assimilate lessons and experiences from across disciplines.

The **longitudinal elements** (Continuity Clinical Experience, Learning Community, Research and VC<sub>3</sub>) continue during the FCC phase.

#### *Immersion Phase (22 months)*

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 clerkship, described below). Students complete a mixture of experiences with varying levels of structured versus work place learning, including acting internships, integrated inter-disciplinary science courses, advanced clinical experiences and electives. Requirements for experiences across various care settings (primary care, critical care) 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.

The **longitudinal elements** (Continuity Clinical Experience, Learning Community and VC<sub>3</sub>) continue during the FCC phase.

The research clerkship, an intensive 3-month scholarly experience, must be completed during the Immersion phase. Students may request an extension of the research clerkship up to a total of 6 months (as a contiguous or non-contiguous block); approval is contingent upon satisfactory progress across all competency domains and will be granted by the Promotions Committee.

## Student Progress and Promotions

#### I. Assessment Philosophy

The underlying philosophy of the assessment system at Vanderbilt University School of Medicine (VUSM) is that attainment of the knowledge, skills, and attitudes 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 members who assist them as they practice these skills. Importantly, the system encourages students to assume increasing levels of responsibility for their own learning.

#### II. Elements of the Student Progress and Promotions Process

- 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
    Milestones for focus competencies within each domain that describe the explicit and measurable behaviors that learners develop as they progress from novice to expert.
- Course and clerkship grades
- 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, block, and clerkship, or by core competency domain to facilitate portfolio reviews.

#### III. Promotions Committees.

The dean of the School of Medicine will appoint a Promotions Committee (PC) for each incoming first-year class, consisting of at least five faculty members who represent a variety of clinical and basic science departments, as well as the broad diversity of the VUSM community. Each PC is charged with making decisions or recommendations as follows:

- To the senior associate dean for health sciences education (SADHSE) regarding promotion of students in its assigned class from one phase to the next;
- To the SADHSE and dean for dismissal; and
- To the dean and the executive faculty for graduation.

A quorum of the PC shall consist of at least half of the voting members of a committee; however, any proposed dismissal requires the participation of all voting members. The chair of the PC may determine whether members must be physically present or may participate remotely for any given meeting. The associate dean for medical student affairs (ADSA), associate dean for undergraduate medical education, the associate dean for diversity in Medical Education, and the senior associate dean for health sciences education (SADHSE) will be non-voting ex officio members of each PC. In addition, course directors for their respective phases will attend PC meetings to provide information about the class as a whole, and to answer questions that PC members may pose regarding individual students. Portfolio coaches will also attend PC meetings during which any of their assigned students are scheduled for presentation.

PCs will meet regularly to review progress of individual students and the progress of its assigned class as a whole. PC meetings will occur three times during the Foundations of Medical Knowledge (FMK) phase, and twice in each subsequent year. Additional meetings may be called by the ADSA if concerns arise regarding any individual student as indicated by academic performance in any competency domain or as needed in the discretion of the ADSA.

#### Promotion

Decisions regarding promotion will be made at the end of the FMK phase and the end of Foundations of Clinical Care (FCC) phase. In view of the integrated and individualized nature of the Immersion phase, decisions will focus on the academic progress of the individual student during this phase instead of a yearly promotion schedule.

PCs determine promotion for those students who have demonstrated expected levels of achievement at the end of the respective curricular phase. PCs will determine whether students are ready for promotion based on successful completion of all phase requirements, as evidenced by passing grades in all required and electives courses, and satisfactory progress in each VUSM Core Competency Domain. The Promotions Committee's determination of satisfactory progress in competency domains will be based on review of the assessment documentation/information compiled in each student's learning portfolio (LP). Students must fully participate in the self-assessment and PLP process in order to be promoted to the next phase.

#### Graduation

The PC for the graduating class will meet shortly before Commencement for final review of student progress. Students who have successfully completed all required curricular elements and who have demonstrated expected levels of achievement in each VUSM Core Competency Domain will be recommended for conferral of degree. These recommendations will be presented in written form to the dean and the executive faculty for final approval.

#### **Student Progress Reviews**

In addition to considerations of promotion and graduation, PCs will meet twice during the FMK phase, once during the FCC phase and three times during the Immersion phase to review student progress. These formative reviews will assess whether students are making satisfactory progress towards attaining the achievement levels required for promotion to the next phase, or towards graduation. They will be based on review of the assessment data compiled in each student's LP.

#### IV. Portfolio Reviews

At times designated on the academic calendar for each phase, students will prepare either formative self-assessments (FSAs) or summative self-assessments (SSAs) that are based on their performance since the prior self-assessment. These self-assessments will use a VUSM Core Competency format, and will be guided by templates in the LP.

Students will begin their self-assessments by reviewing data accrued for each of the VUSM sub-competencies in a core competency domain. For the most part, this data will result from curricular assessments, but students may also enter data that represents extra-curricular activities, such as volunteer work or organizational leadership. For each sub-competency, students will designate a milestone level that describes their level of achievement. After indicating a milestone level for each sub-competency in a certain domain, students will assign a domain score for each VUSM core competency:

For the FMK phase, these domain scores will be:

- Below Threshold
- Threshold
- Target

For FCC and Immersion phases these domain scores will be:

- · 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

"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 achievements that define Threshold, Target, and Reach will progress with the phases of the curriculum.

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

- A brief justification for each score, citing specific assessment evidence. These justifications will be 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 will be guided by prompting questions.
- A personalized learning plan (PLP) based on the summary reflection. The PLP will consist of:
  - Learning goals
  - Activities that students will undertake to meet learning goals
  - o Metrics that will indicate attainment of learning goals
  - o A timeline for achievement

Students must specifically address any core competency with a domain score of Threshold or Below Threshold both in their summary reflections and in their PLPs.

After students complete their self-assessments (either FSAs or SSAs) and PLPs, they will submit them electronically to their portfolio coaches and schedule meetings with the portfolio coaches. Coaches will have reviewed student LPs prior to the meetings, and will have independently designated milestone levels for each sub-competency and domain scores for each core competency. At the time of the meetings, coaches and students will review their scores, discuss and attempt to resolve differences, and review PLPs for appropriateness. The original student self-assessment, the coach assessment, and the report of the joint assessment resulting from the student-coach meeting will all be submitted to a designated PC member for review prior to the scheduled PC meeting and will become a part of the LP. If differences were not resolved during the student-coach meeting, this will be indicated in the accompanying report form submitted to the PC member. The PC will make a final determination regarding the correct levels and scores. PC members will have complete access to the assessment evidence in the LPs of all students assigned to them to assist in making these determinations.

#### V. Promotions Committee Meetings

Every Promotions Committee (PC) member will be assigned a cohort of students to follow throughout medical school. Prior to each meeting, PC members must review all materials submitted for each assigned student. In addition, the PC member must review the PLP of any student with a domain score of Threshold or Below Threshold.

Any student with a domain score of Threshold or Below Threshold must be presented by the PC member at the PC meeting. In addition, PC members will present any assigned student with unresolved differences between student self-assessment and Coach assessment along with his/her recommended scores. If the PC member cannot attend a PC meeting in person or remotely to make the needed presentations, he/ she will designate another member of the PC to share the information regarding the student. The PC member initially assigned to the student will share with the alternate PC any information that he/she may have assembled in preparation for the meeting.

#### **Progress Meetings**

The PCs will make one of the following designations for each student at all student progress meetings:

- Satisfactory Progress: Generally for students with all Target or Reach scores and passing grades in all courses
- 2. Satisfactory Progress with Concern: Generally for students with 1-2 Threshold scores, regardless of course grades; and/or P\* course grade
- 3. Unsatisfactory Progress: Generally, for students with >2 Threshold scores or 1 Below Threshold, regardless of course grades; and/or failing course grade\*\*. Ordinarily these students will be 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 a specific competency domain or domains by the course director. This will automatically result in a Below Threshold score in those domains for that assessment period.

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 alternate

remediation plan or repeat course work must be a part of the PLP in order for the PC to approve the PLP. In addition, failing Step 1 of the USMLE automatically results in a Below Threshold score in Medical Knowledge and must be addressed in the PLP in order for the PC to approve the PLP.

The PLPs for students with designation of Satisfactory Progress with Concern or Unsatisfactory Progress must be approved by the PC and these students must be presented at the next PC meeting to review progress in addressing deficiencies. The PC may require additional meetings between the coach and a student with a status of Unsatisfactory Progress or Satisfactory Progress with Concern during the period between PC meetings.

#### **FMK and FCC Promotions Meetings:**

The PCs will make one of the following decisions or recommendations for each student at the FMK and FCC Promotions meetings:

- 1. Promotion
- 2. Promotion on Probation
- 3. No Promotion
  - a. Repeat the Phase on Probation
  - b. Dismissal

Because the portfolio review includes assessment of competencies across courses, it is possible for students to pass all of their courses and still have concerns within competency domains that warrant probation or dismissal.

Decisions on all actions other than dismissal (promotion, promotion on probation, or no promotion with repeat the phase on probation) are made by the PC. The SADHSE will review those decisions upon the written request of the student as set out in the section on probation below.

Students will be notified by the ADSA of all Promotions Committee decisions. For Promotion, this shall generally be done in writing. For other actions of the Promotions Committee, the student will be informed in person by the ADSA (if possible) and the decision of the PC will be confirmed in writing by the chair of the Promotions Committee.

VI. Adverse Actions

#### **Probation**

Students may ask the SADHSE for reconsideration of any decision for probation or non-promotion on probation. The request must be made in writing within 7 calendar days of receiving the decision from the ADSA. The student may meet with or present any additional information in writing to the SADHSE, who will review the information presented by the student, the Chair of the PC, and the deliberations of the PC, and either uphold the PC decision, request a meeting for reconsideration of additional information, or reverse the decision. If a decision for probation or non-promotion on probation is reversed by the SADHSE, the SADHSE will respond to the PC in writing with his/her decision. Even if the SADHSE reverses a decision of the PC, the SADHSE can require that the student follow any PC requirements and/or recommendations for addressing deficiencies (See below).

The PLPs for students who are placed on probation for any reason must include a specific remediation plan that is approved by the PC. The PC may add requirements to the PLP, such as regular meetings with the associate dean for medical student affairs or other advisers, and/or recommendations such as elimination of extra-curricular activities that may be interfering with satisfactory academic progress. All students who are placed on probation will receive a letter from the chair of the PC 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 can be taken if conditions are not met. Probation is considered an adverse action that will be noted on the student's transcript and the Medical Student Performance Evaluation, and will be reported as necessary in future graduation verifications and other requests for information.

All students on probation will be presented at the next PC meeting to determine whether there has been satisfactory progress. At that time the PC may take the following actions:

- 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.
- Continue probation: Domain scores not yet at Target but progress is being made. This action is also subject to reconsideration by the SADHSE.
- Recommend dismissal: Domains of concern remain Below Threshold or at Threshold, and/or or additional domains are scored at Threshold or Below Threshold.

#### Dismissal

PCs ordinarily will recommend dismissal only after a student has been given a reasonable probationary period to address deficiencies. Most often, this reasonable period will consist of a full academic phase for FCC or FMK; for the Immersion phase, the PC will designate a period of time during which the deficiency must be addressed. A decision to recommend dismissal requires participation of all PC members.

Dismissal may be recommended at any time for a student who demonstrates either a singular egregious behavior or is involved in a serious incident(s) that is inconsistent with the expectations for medical students at VUSM, violates university policy, or demonstrates a pattern of unprofessional behavior or other academic failures. The PC will meet as soon as possible to consider the situation, including its severity, and render a recommendation. The ADSA will meet with the student prior to the PC meeting to hear the student's explanation, including any mitigating circumstances that could affect the PC's recommendations. The ADSA will present the student's explanation, as well as any mitigating circumstances to the PC. Alternately, the student may elect to appear before the PC in person or to submit their explanation and any other information to be considered by the PC in writing, or may ask another faculty member to appear to offer information on behalf of him or her at the PC meeting.

If a recommendation for dismissal has been made by the PC, the ADSA will present the recommendation to the SADHSE and the dean. The dean may reverse the recommendation if the dean disagrees with the decision, or if mitigating factors are identified and presented in writing by the student or by the SADHSE. If a recommendation for dismissal is reversed by the dean, the dean will respond in writing to the PC. In this circumstance the PC will consider whether probation or other action is appropriate under the guidelines above. If the dean accepts the recommendation of dismissal it will be confirmed in writing, and the ADSA will meet with the student to inform him/her of the decision. The ADSA will also review the following options with the student:

- 1. Voluntary withdrawal from VUSM. The decision to withdraw must be presented in writing by the student to the ADSA within seven (7) calendar days of the ADSA's meeting with the student to inform him/her of the decision of dismissal.
- 2. Dismissal. If the student does not request to withdraw within this seven (7)-calendar-day time frame, the dismissal will take effect on the eighth calendar day.
- 3. Appeal. Appeals must be made in writing to the ADSA within seven (7) calendar days of the meeting between the ADSA and the student regarding the dean's decision to accept the recommendation of dismissal. An appeal automatically ends a student's right to withdraw.

If the student is unwilling or unable to meet with the ADSA, the student will be informed of the decision in writing and the time frame will run from the date of the written notice.

#### **Appeal of Dismissal**

A student who decides to appeal a decision of dismissal must submit a written request to the ADSA within seven (7) calendar days of notification of dismissal. If a dismissal decision is appealed, a review panel consisting of at least five (5) members of the executive faculty will be assembled by the dean or the dean's designee for a hearing within seven (7) calendar days of the written request from the student, unless the chair of the review committee determines that there are valid reasons to extend this time frame. In preparation for the hearing, the ADSA will make available any relevant information/documentation for the panel's review, which will include the all of the assessment components of student's LP. The ADSA will answer any questions regarding the appeal from the student and assist the student with gathering additional information or documentation. The student may choose to be present or make a presentation in writing, which may contain documentation from other students, faculty members, and/or other sources. In addition, the student may request a faculty member to be present and offer information to the review panel. The student cannot have other representatives at this meeting. The chair of the PC will attend this meeting to represent the findings of the PC. The ADSA will also attend the meeting to answer questions from the review panel. If the review panel upholds the decision, the student will be dismissed without opportunity to withdraw. If the review panel reverses the decision, the review panel will refer the student's status to the PC with its written findings, for consideration of probation, and the requirements and conditions that would accompany that (see above). The review is conducted without the presence of attorneys for either party. However, either party may consult with its own counsel prior to such review or during a break in the proceedings. The decision of the review panel will be final.

#### **Temporary Suspension**

The School of Medicine reserves the right, through the SADHSE (or designee), to temporarily suspend a student for conduct disrupting the operations of the Medical Center, including the School of Medicine, pending referral to the Promotions Committee or other appropriate process. The SADHSE will notify the student in writing of the conditions of the temporary suspension. If the student is reinstated, the student will work with the ASDA to address any course work during the suspension.

# Degree Requirements—Other Degrees

#### **Hearing and Speech Sciences**

All candidates for the doctor of audiology (Au.D.), master of science in speech-language pathology (M.S.–S.L.P.), and master of education of the deaf (M.D.E.) degrees must have satisfactorily completed all residency, academic course, and clinical practica requirements of their respective programs.

#### **Doctor of Audiology**

Degree Requirements

- The candidate for the Au.D. degree will spend at least nine academic semesters of graduate study at Vanderbilt and is expected to be enrolled in the School of Medicine during each fall, spring, or summer semester until completion of the degree.
- For Au.D. students, a minimum of 70 semester hours of formal, didactic course work which includes 15 clinical practicum semester hours is required for the Au.D. degree.
- All Au.D. students are expected to participate and make good progress in developing clinical skills through clinical practicum throughout their program. The first semester of clinical practicum will involve more observation and guidance than actual hands-on experience. A grade of Pass (P) or Fail (F) will be awarded for the first semester of practicum, primarily based on attendance, punctuality, professionalism, and active engagement in the learning process. In subsequent semesters, clinical supervisors award traditional letter grades (A, B, C, F) for clinical performance/learning, a grade which may be reduced for unexcused absences from either clinic or clinical case conference according to prevailing departmental guidelines. 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.
- Au.D. students must complete a fourth-year clinical externship which begins at the conclusion of the third year and must continue for a minimum of ten months.
- All Au.D. students must complete a capstone project. The doctoral capstone project comprises 6 credit hours taken in years 2 and 3.

#### Master of Science-Speech Language Pathology

Degree Requirements

- The candidate for the S.L.P. will spend at least five academic semesters of graduate study at Vanderbilt. Candidates for the S.L.P. are expected to be enrolled in the School of Medicine during each fall, spring, or summer semester until completion of their degree requirements.
- For S.L.P. students with an undergraduate background in communication sciences and disorders: A minimum of 48 semester hours of formal, didactic course work and 10 to 11 clinical practicum credit hours is required for the master's degree. For S.L.P. students without an undergraduate background in communication sciences and disorders: A minimum of 54 semester credit hours of academic coursework and 11 clinical practicum credit hours is required. Curriculum requirements, course content, and the number and distribution of credit hours within the 58-65 total are determined by the S.L.P. program faculty.

• 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 will complete the observation during the first semester before having an opportunity for direct patient contact. During the final semester of enrollment, the student will complete 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.

#### Master of Education of the Deaf

Degree Requirements

- The candidate for the M.D.E. degree will spend 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.
- For M.D.E. students on the one-year track, a minimum of 30 semester hours of formal, didactic course work and 8 practicum semester hours is required. Students on the two-year track must complete a minimum of 50 semester hours of formal, didactic course work and 14 practicum semester hours.
- 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 in an auditory-oral setting, is required for graduation.
- Students must also complete a service obligation experience which provides them with the opportunity to gain an enhanced understanding of the challenges facing 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.

#### Master of Health Professions Education

Degree Requirements

- Candidates for the M.H.P.E. degree must have completed two years or six semesters of course work with a total of 36 semester credit hours. Each student will be expected to enroll in fall, spring, and summer semesters until completion of degree requirements.
- Students must also complete a capstone project for a total of 5 semester credit hours.

#### Master of Laboratory Investigation

Degree Requirements

• Candidates for the M.L.I. degree are required to complete thirty-six semester credit hours. However, no more than twelve hours may be taken in an academic year, unless approved by the program director. Entering students are required to complete Responsible Conduct of Research. Students may earn a maximum of 6 semester credit hours for Interdisciplinary Graduate Program (IGP) bioregulation modules. To complete thirty-six hours of credit, students will choose one of three program tracks.

- 1) Research with Thesis Track: Students who choose this track will develop a research project under the direction of a mentor and must register for twelve semester hours of research. Note: Only research conducted outside of one's job requirements can be considered for research credit. *In lieu* of a formal thesis, a graduate student can prepare a manuscript that is suitable for publication. Although it is highly desirable that the manuscript be published, there is no requirement that the manuscript be published in order for a student to graduate.
- 2) Modified Research Track: Students who pursue this track
  are not required to write a thesis, but 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 semester hours of research
  and at least six hours of technique training modules. Note:
  Only research conducted outside of one's job requirements
  can be considered for research credit.
- 3) Techniques Track: Individuals who have a strong academic/ research background may select a track that emphasizes strengthening their laboratory techniques. This track requires twelve semester hours of advanced technique modules.
- Students are required to assemble a committee of faculty members who will direct their research and the selection of course work and technique modules throughout the degree program. A committee includes a minimum of three faculty members, one of whom will be the student's mentor. Committee approval of satisfactory progress is required each semester.

#### **Master of Public Health**

Degree Requirements

- Candidates for the M.P.H degree must complete 42 semester credit hours of course work. Students in both tracks take core courses in epidemiology, biostatistics, social and behavioral science, environmental health, and research ethics. Students in the epidemiology track take advanced courses in epidemiology, biostatistics, research design, health services administration, and program and policy evaluation. Students in the global health track take advanced courses in global health, health services administration, and leadership, policy, and management, and core electives with an emphasis on education, management/leadership, or biomedical informatics in global settings.
- Satisfactory completion of a practicum and the master's thesis, which will be graded as Pass/Fail, is also required.
- Up to 15 credit hours of course work from other schools at Vanderbilt or other universities may be applied to the required 42 credit hours needed for the degree, conditional upon the approval of the Admissions Committee; other hours must be completed from program offerings.

## Master of Science in Clinical Investigation

Degree Requirements

- Candidates for the M.S.C.I. must have completed 36 semester credit hours of course work.
- Completion of a final project in the form of a submissionready, extramural grant or an original article for publication in a peer-reviewed journal is also required. Final projects are reviewed and approved by the Promotions Committee.

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.

# Professional Program in Medical Physics

#### **Professional Doctorate in 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 will be in didactic classroom and laboratory instruction, with an emphasis on either imaging or radiotherapy physics.
- Candidates will 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 will total a minimum of 24 months. Limited introductory clinical training called practicum (approximately three full-time equivalent months) will occur in year 2; students will receive 6 professional credit hours for the successful completion of the practicum.

#### Master of Science in Medical Physics

Degree Requirements

- Candidates for the M.S.M.P. must complete a total of 38 semester credit hours. Of this total, 32 semester credit hours will be in didactic classroom and laboratory instruction with an emphasis on either imaging or radiotherapy physics.
- Students are required to complete 6 semester credit hours of professional 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 may choose a thesis or non-thesis option in either discipline. Students in the non-thesis option may choose to participate in a 1-2 semester credit hour independent study.

# Academic Policies—Other Degrees

#### Registration

Academic Load and Credit Hours. The normal academic load for fulltime status is 8 to 12 hours in the fall and spring semesters. Half-time status is 4 to 7 hours. The summer full-time load is 6 or more hours with half-time load at 3 to 5 hours. All full-time students must register each fall and spring semester with no breaks in registration to remain in good standing. Students in the Department of Hearing and Speech are required to have continuous enrollment through fall, spring, and summer semesters. For courses given in sequence or with prerequisite

courses, a student may not enroll in the second or subsequent course without completing the first course in the sequence with a grade of B or higher.

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

Changes in registration. Changes to semester-long courses must be made 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 will be given. After the mid-point of the semester, a student is not permitted to withdraw from the course except under certain circumstances. Failing the course is not considered one of the circumstances. Students should also be aware of financial ramifications of dropping a course after the change period. Some programs may allow additional change periods within the term.

Auditing a course. Auditing of courses may be subject to program-specific policies. Some programs do not allow auditing due to the strong emphasis on student participation in course work. With the program and instructor's permission, students may be permitted to audit a course. Only students registered for regular courses will be allowed to audit a course. Students who audit are expected to attend class regularly. Audits will be recorded on the student's transcript. Students may be limited to the number of courses that may be audited in a given semester. A grade of *AW* will be entered onto a transcript when a student withdraws from a course that is being audited after the change period (the first ten days of the term).

Special students. 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 within which the course is offered. Approval of the instructor and the program administration is required. Special students must meet the same eligibility requirements as the program's degree seeking students. Registration for individual classes is contingent upon availability of space in the course.

Joint degree students. Students pursuing a joint degree will be required to designate a primary degree program during each registration period.

#### **Grading and Promotion Policies**

*Grading.* The grading scale will include the following:

A+ = 4.0= 4.0

Α-= 3.7B+ = 3.3

В = 3.0

B-= 2.7

= 2.3 C+

С

= 1.7 (no earned hours/quality hours and quality points only)

= No credit

Pass/Fail Grading: Some courses may be designated as pass/ fail. The grades for these courses will not be calculated in the GPA unless the final grade is F. Degree-seeking students may not elect to take a course 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 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.

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

Academic Probation and Good Standing: A cumulative grade point average of 3.0 is required for graduation. A semester average of 3.0 is required to remain in "good 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 advised to withdraw or face dismissal. Degree programs may have additional requirements concerning requirements for the degree.

Repeating a Course: Students may be required to repeat a course for which a grade of *C* or below was received. Both courses will be reflected on the transcript, but the second grade earned will be the one used in computing the student's grade point average. In some programs only a grade of *B* or better will count toward degree requirements.

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. Changes may be submitted to the School of Medicine registrar for submission. This policy also includes changing an *I* to a final grade.

Grievance Procedure: 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 director of their degree program with any concerns. Each program will determine the process through which a grievance will be addressed. It is recommended that students address these issues as soon as possible, but preferably within six months of the completion of the course work.

Transfer Credit: Only those courses for which a student has received a grade of *B* or its equivalent will be considered for transfer. In general, no more than 6 credit hours earned as a non-degree seeking student may be applied toward degree credit. In some programs, students may petition for approval of additional credits to be applied to their degree program. Credit will not be given for courses taken in the Division of Unclassified Studies.

Credit for Courses Taken as an Undergraduate: Students may not request credit for work taken prior to beginning the degree program if the credit was used to satisfy requirements of the previous degree. Students wishing to receive credit from previous work must request approval through the director of the program.

Satisfactory Academic Progress: The normal time frame for completion of required course work for the doctor of audiology and doctor of medical physics degrees is four academic years. The maximum time for completion of these degrees is no more than five years. The normal time frame for completion of required course work for the master of science in medical physics, master of public health, master of education of the deaf, master of science (speech-language pathology) and master of clinical investigation is two years. The maximum time for completion of these degrees is no more than three years. The normal time frame for completion of required course work for the master of laboratory investigation is three years. The maximum time for completion of the degree requirements is no more than four years.

#### **Student Actions**

Leave of Absence. Students who wish to interrupt their study must request and receive a leave of absence from the program director. Additional approval may be required for some programs. A leave of absence is granted for a maximum of one year. Students who do not register after the leave may be dropped from the rolls and may be required to request reinstatement to the program. All programs have limits to the time within which all requirements must be completed, and it is the student's responsibility to be aware of these limits.

Withdrawal from the University. Students who intend to withdraw from the university should inform the program director in writing. Improper notification may result in academic or financial penalties.

#### 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. In the same way when degree requirements have been completed, it is necessary for the degree to be conferred. A student completing degree requirements in the summer or fall semester will be invited to participate in Commencement the following May; however, the semester in which the degree was actually earned will be the one recorded on the diploma and the student's permanent record. Students unable to participate in the graduation ceremony will receive their diplomas by mail. All students are required to be free of indebtedness to the university at the time of graduation.

# 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 one-eighth of the students of the fourth-year class are eligible for membership, and only one-half of the number of eligible students may be elected to membership during the last half of their third year. 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.

#### 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 School of Medicine who, in the judgment of the Executive 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.

#### Class Day Awards

THE SCHOOL OF MEDICINE AWARD OF DISTINCTION. This award is presented to students who have demonstrated outstanding leadership abilities in service to the School of Medicine.

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.

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 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.

GLASGOW-RUBIN CERTIFICATE OF COMMENDATION. This certificate is presented in recognition of women medical students who graduate as honor graduates. It serves to reaffirm the American Medical Women's Association's commitment to encouraging their continuing achievement.

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.

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.

DAVID R. FREEDY MEMORIAL AWARD. This award was established to honor the memory of David Richard Freedy, a member of the Class of

1993. It is given to the student whose character, integrity, and courage provide inspiration to others and who has been dedicated to improving and promoting community life.

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. The award is in memory of Dr. Amos Christie, who was Professor and Chairman of the Department of Pediatrics from 1943 to 1968.

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 Vandarbilt

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 Professor and Chairman 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.

CANBY ROBINSON 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 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.

RUDOLPH KAMPMEIER PRIZE IN MEDICINE. The Kampmeier Award 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.

SURGICAL CLERKSHIP AWARD. This award is presented by the Section of Surgical Sciences to a student who has shown superior performance in the third-year surgical clerkship and who plans to enter graduate education in surgery.

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.

HOSPITAL AWARD OF EXCELLENCE. This award recognizes the fourth year 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 Medical Center.

BEAUCHAMP SCHOLARSHIP. Endowed and awarded to the student showing the greatest progress in the field of psychiatry.

THE AWARD FOR 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.

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.

THE TOM NESBITT AWARD. This award is presented by the Nashville Academy of Medicine in recognition of the service and contribution of Tom Nesbitt, M.D., as a member of the Academy and 133rd president of the American Medical Association. It also honors the quality of medical leadership in Nashville, as evidenced through the eight AMA presidents elected from the Nashville Academy of Medicine, the most of any county in the country. For achievement in educational, socio-economic, and legislative affairs, the Tom Nesbitt award is presented to the graduating medical student who has understanding and appreciation for such endeavors, and who demonstrates exemplary character and leadership.

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.

PAULA C. HOOS AWARD. The first-year class presents this award in recognition of teaching excellence in the anatomy laboratory and to express appreciation for the assistance of members of the graduating class.

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 HARRISON SHULL SR. GASTROENTEROLOGY AWARD. This award is to recognize a medical student who has demonstrated outstanding clinical performance during the student rotation in gastroenterology or hepatology.

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

EXCELLENCE IN EMERGENCY MEDICINE. This award for Excellence in Emergency Medicine is given on behalf of the Society for Academic Emergency Medicine. This award recognizes a medical student for outstanding clinical performance in the Emergency Department at Vanderbilt University Medical Center.

TENNESSEE ACADEMY OF FAMILY PHYSICIANS OUTSTANDING STU-DENT IN FAMILY MEDICINE AWARD. This award is presented in recognition of dedication to the high ideals of family medicine.

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.

JAY W. SANDERS HONORS IN AUDIOLOGY AWARD. Given by the faculty in the Department of Hearing and Speech Sciences for outstanding clinical and academic achievement in audiology.

AMERICAN ACADEMY OF NEUROLOGY MEDICAL STUDENT PRIZE FOR EXCELLENCE IN NEUROLOGY. This award is to recognize medical students for excellence in clinical neurology.

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.

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.

DIXON N. BURNS AWARD IN MEDICAL ETHICS. This is an award given by the Center for Clinical and Research Ethics to the graduating medical student who has, through a written essay, demonstrated unusual ability in identifying and analyzing ethical issues presented in either clinical or research contexts.

FAMILY AND COMMUNITY MEDICINE MERIT AWARD. This award is presented to a graduating medical student who has demonstrated leadership and a commitment to family and community health care.

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.

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.

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.

OUTSTANDING TEACHING BY A MEDICAL STUDENT IN BRAIN AND BEHAVIOR. An award, given by the Department of Cell and Developmental Biology, to recognize truly outstanding teaching by a medical student in the Brain and Behavior module.

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.

RUSSELL J. LOVE HONORS IN SPEECH-LANGUAGE PATHOLOGY. Given by the faculty in the Department of Hearing and Speech Sciences for outstanding clinical and academic achievement in speech-language pathology.

# Financial Information

## Financial Information for Medical Students

uition for the academic year 2013/2014 is \$44,030. The annual expense of a first-year student in the School of Medicine is estimated to be \$74,324.

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

#### 2013/2014

Application fee (to accompany secondary application)	\$ 50
Student activities and recreation fee	487
Student health insurance	2,239
Professional liability insurance	410
Student long-term disability insurance	52
Student health service fee	65
Verification fee	150
Transcript fee (one time only)	30

#### **Payment of Tuition and Fees**

All regularly enrolled medical students must pay the full tuition each year. There will be 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. One half of tuition, fees, and other university charges are due and payable by 14 August. The second half of tuition, fees, and other university charges are due and payable by 31 January. Additional information can be found at *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 will be made after the tenth week in any term.

Withdrawal prior to the end of	Reduction
1st full week	100%
2nd full week	90%
3rd full week	85%
4th full week	80%
5th full week	75%
6th full week	65%
7th full week	60%
8th full week	50%
9th full week	45%
10th full week	40%

No refund after the 10th full week.

#### Late Payment of Fees

Charges not paid by 14 August will be automatically deferred, and the student's account will be assessed a monthly late payment fee at the following rate: \$1.50 on each \$100 that remains unpaid after 14 August (\$5 minimum). An additional monthly late payment fee will be assessed unless payment is received in

full on or before the end of each month, and late payment fees will continue for each month thereafter based on the outstanding balance unpaid as of the end of each month. All amounts deferred are due not later than 15 October for fall semester and 15 March for spring semester. Graduating students are not allowed to defer charges that are billed in advance for the final semester.

#### **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, will be 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 will be issued. Information will be provided by the university Office of International Student and Scholar Services.

#### **Activities and Recreation Fees**

The required student activities and recreation fees entitle students to use the facilities of Sarratt Student Center and the Student Recreation 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 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**

Students will be automatically covered with professional liability insurance, required of all enrolled medical students, at the time of registration. The annual premium is payable in addition to tuition. Details of the policy are available at 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 whether they are at the Vanderbilt-affiliated hospitals (Vanderbilt University Medical Center, Nashville Veterans Administration Hospital, St. Thomas Hospital, or Baptist 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, and (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.

#### **Disability Insurance**

Students will be automatically covered with long-term disability insurance, required of all enrolled medical students, at the time of registration. The annual premium is payable in addition to tuition. Details of the policy can be found at <a href="https://medschool.vanderbilt.edu/financial-services/insurance">https://medschool.vanderbilt.edu/financial-services/insurance</a>.

#### 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 www.gallagherkoster.com. Additional information is also available at vanderbilt.edu/stuaccts/g\_health.html.

#### Student Health Service Fee

The required student health service fee covers required immunizations and health screening tests.

#### **Verification Fee**

The required verification fee covers all verification processes as required, including criminal background checks and drug screens.

#### **Transcript Fee**

All new students entering Vanderbilt for the first time are charged a one-time transcript fee for official university transcripts.

#### Financial Assistance

Education leading to the doctor of medicine degree 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. Institutional financial aid is not adequate to meet students' demonstrated need, but approved educational expenses are met with funds from a combination of sources. 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 <a href="https://medschool.vanderbilt.edu/financial-services/">https://medschool.vanderbilt.edu/financial-services/</a>. Applicants desiring more specific information about financial aid resources should contact the medical school Office of Student Financial Services.

The following are Vanderbilt University School of Medicine institutional scholarships and loans available to assist students.

#### **Scholarships**

THE JAMES T. AND OLIVIA R. ALLEN SCHOLARSHIP FUND. Established in 1993 by Dr. and Mrs. James T. Allen (M.D. 1942) to provide scholar-ship assistance to needy and worthy students enrolled in the Vanderbilt University School of Medicine. Preference should be given to students who are members of the First Baptist Churches of Murfreesboro, Dickson, Waverly, Tennessee, in that order, but if no qualified students apply in any one year, that preference then be given to applicants who are Tennessee residents, and if no such qualified student applies in that year, give it to any qualified applicant.

THE ALPHA KAPPA KAPPA SCHOLARSHIP FUND. These funds are made available to students through contributions from alumni of the Alpha Kappa Kappa medical fraternity.

THE LUCILE R. ANDERSON SCHOLARSHIP FUND. This scholarship was established by Lucile R. Anderson (M.D. 1933).

THE SUE AND NELSON ANDREWS SCHOLARSHIP FUND. This endowed scholarship fund was established in 2001 through the generosity of Board of Trust member Nelson Andrews (B.A. 1950) and his wife, Sue Adams (B.A. 1951), to help deserving and needy students attend the School of Medicine.

THE BAKER-LEONARD SCHOLARSHIP. This scholarship was established by Quentin B. Leonard in memory of his grandparents, Bertha B. Baker and James S. Baker, his parents, Josephine F. Leonard and Sidney Leonard, and his uncle, Serring B. Baker.

THE EUGENE AND MARGE BESPALOW SCHOLARSHIP FUND. This endowed scholarship fund for deserving medical students was established by Dr. Bruce Dan (M.D. 1974) in honor of his grandparents.

THE THOMAS M. BLAKE SCHOLARSHIP. This endowed scholarship was established through a bequest provision by the late Thomas M. Blake, a 1944 graduate of the School of Medicine. The income is used to assist worthy students in the School of Medicine on the basis of merit. Partial-tuition scholarships are awarded periodically.

THE DR. DANIEL B. BLAKEMORE SCHOLARSHIP FUND. This endowed scholarship was established by the will of Mrs. Nell J. Blakemore in memory of her husband for the benefit of worthy medical students who are in need of financial assistance.

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

THE BURRUS SCHOLARSHIP FUND. This endowed scholarship was established by members of the Burrus family to help meet the cost of tuition for medical students.

THE GREER BUSBEE III SCHOLARSHIP FUND. This endowed scholarship fund was established in 1999 by Dr. and Mrs. Brandon Busbee in remembrance of Greer Albert Busbee III for the benefit of medical students with financial need.

THE THOMAS CULLOM BUTLER AND PAULINE CAMPBELL BUTLER SCHOLARSHIP. This endowed scholarship was established by Thomas Cullom Butler (M.D. 1934) for worthy and needy medical students.

THE JIM AND JAN CARELL SCHOLARSHIP. This annually funded scholarship was established in 2011 by James W. and Janet K. Carell to provide financial support based on need to deserving students at the School of Medicine.

THE CARELL FAMILY SCHOLARSHIP. Established in 2012 by the children of James W. Carell to provide annual scholarship support to deserving students at the School of Medicine.

THE WILLIAM ROBERT CATE, M.D., SCHOLARSHIP. This endowed scholarship was established in 1996 by numerous donors to provide unrestricted scholarship support for the School of Medicine.

THE JOHN E. CHAPMAN M.D. ENDOWED SCHOLARSHIP FUND. This endowed fund was established in 2001 by friends, colleagues, and medical alumni to honor Dean Chapman, the seventh dean of the School of Medicine, upon his retirement after twenty-five years of service. Full- and partial-tuition scholarships are awarded on the basis of merit and need.

THE JOHN E. CHAPMAN, M.D., AND JUDY CHAPMAN SCHOLARSHIP. This endowed scholarship fund was established through a bequest provision by the late Grace McVeigh to honor her friends Dean Chapman and his wife Judy for their many years of service at Vanderbilt University. The income is used to support needy and worthy students in the School of Medicine.

THE ALICE DREW CHENOWETH SCHOLARSHIP. This scholarship honors the career of Dr. Alice Drew Chenoweth (M.D. 1932), who had a distinguished career as a pediatrician in the area of public health.

THE 1943 SCHOOL OF MEDICINE MARCH AND DECEMBER CLASS SCHOLARSHIP. These endowed scholarships were established by members of these medical school classes.

THE 1946 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholar-ship was established by members of this medical school class.

THE 1953 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE 1962 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholar-ship was established by members of this medical school class.

THE 1964 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE 1966 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholar-ship was established by members of this medical school class.

THE 1967 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE 1971 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE 1972 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE 1975 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE 1976 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholar-ship was established by members of this medical school class.

THE 1978 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established in 2007 to provide scholarship support to students enrolled in the School of Medicine.

THE 1979 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE 1982 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE 1986 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE 1987 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE 1989 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE 1990 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE 1991 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholar-ship was established by members of this medical school class.

THE 1992 SCHOOL OF MEDICINE CLASS SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE DR. ROBERT D. COLLINS SCHOLARSHIP FUND. This endowed scholarship was established by alumni in honor of Dr. Robert D. Collins (M.D. 1951) a distinguished and admired longtime professor of pathology.

THE COMMONWEALTH SCHOLARSHIP. This scholarship aid is made possible by the generosity of the Commonwealth Fund of New York City, a private foundation which has been supporting needy and deserving students in the School of Medicine for many years.

THE MARVIN B. AND MILDRED G. CORLETTE SCHOLARSHIP. This scholarship was established in December 2003. This endowment will support students in the medical school.

THE LOUISE WILLIAMS COUCH SCHOLARSHIP. This endowed scholarship was established in 1998 in a letter from Dr. Orrie A. Couch requesting that a fund he established in 1962 at the George Peabody College for Teachers (now Peabody College at Vanderbilt) be transferred to the medical school for the purpose of providing scholarship support for medical students.

THE DEBORAH AND C. A. CRAIG II MEDICAL SCHOLARSHIP FUND. This fund was established in 1992 by Mr. and Mrs. C. A. Craig II. It provides support to talented and deserving students engaged in the study of medicine. Preference is awarded to former Eagle Scouts.

THE JACK DAVIES SCHOLARSHIP FUND. This fund was endowed primarily through gifts from the Classes of 1981, 1982, 1983, 1984, and 1994 in honor of the distinguished and beloved longtime professor of anatomy. This fund is designed to provide medical student financial assistance.

THE J. T. AND MARY P. DAVIS SCHOLARSHIP FUND. This endowed scholarship was established by J. T. Davis (M.D. 1931).

THE JOE C. DAVIS SCHOLARSHIP. The Davis Scholarship is given periodically to an incoming medical student who has demonstrated qualities of scholarship and leadership, as well as financial need. To be eligible, the candidate must come from a state specified as a Southeastern state east of the Mississippi. Full- and partial-tuition scholarships are awarded periodically for four years of medical study.

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

THE HERBERT ESKIND MEMORIAL FUND. This scholarship honoring the memory of Mr. Herbert Eskind was established by members of his family.

THE ROBERT SADLER-WILLIAM EWERS SCHOLARSHIP FUND. This endowed scholarship was established in honor of Robert Sadler (M.D. 1947) and William Ewers (M.D. 1947).

THE J. F. FOX STUDENT SCHOLARSHIP IN MEDICINE. This fund was established in memory of Dr. J. F. Fox (M.D. 1898) and provides for annual assistance to students in the School of Medicine based on scholarship, promise, and financial need.

THE THOMAS F. FRIST SR., M.D., SCHOLARSHIP. Established in 2006 by H. Lee Barfield (B.A. 1968, J.D. 1974) and Mary Frist Barfield (B.S. 1968) to honor her father and to provide financial assistance to medical students at the Vanderbilt University School of Medicine. Dr. Frist was a pioneer in the world of for-profit health care and founded Hospital Corporation of America in 1968.

THE SHERRY AND RUSSELL GALLOWAY SCHOLARSHIP. This endowed scholarship was established in 2012 by Sherry J. Galloway (B.A. 1980, M.D. 1984) and Russell E. Galloway (M.D. 1984) to provide needbased scholarship support to students at the School of Medicine.

THE GHERT-ROUSSEAU FAMILY SCHOLARSHIP FUND. This endowed scholarship was established in 2010 by the Ghert-Rousseau family to provide financial support for deserving students at the School of Medicine.

THE D. G. GILL SCHOLARSHIP FUND. This fund was established in 1982 by the family of the late Dr. Daniel Gordon Gill. First preference goes to those students with financial need who have expressed an interest in the field of public health.

THE FRED GOLDNER, M.D. SCHOLARSHIP. This endowed scholarship was established in 2012 by Martha U. Goldner and Fred Goldner Jr. (BA 1945, MD 1948) to provide scholarship support based on financial need or academic merit to deserving students at the School of Medicine.

THE DRS. FRANK LUTON AND CLIFTON GREER SCHOLARSHIP FUND. This fund was founded in 1995 through a gift from the estate of Dr. Clifton Greer (M.D. 1951) in honor of the late Dr. Luton (M.D. 1927). It provides tuition support for medical students with demonstrated financial need, with preference given to those from the southeastern United States.

THE DR. HARRY GUFFEE SCHOLARSHIP FUND. This endowed scholarship was established in honor of Dr. Harry Guffee (M.D. 1939). Residents of Williamson County, Tennessee, are given first preference, and residents of the counties adjoining Williamson County are given second preference.

THE SCOTT AND TRACIE HAMILTON SCHOLARSHIP. This endowed scholarship was established in 2012 by The Pioneer Fund to provide scholarship support based on financial need to deserving M.D. or M.D/Ph.D. students at the School of Medicine. The Pioneer Fund was established in 1960 by Helen McLoraine, a pioneer in her own right in the oil industry. The gift was directed by trustees Scott and Tracie Hamilton.

THE GLENN AND VIRGINIA HAMMONDS SCHOLARSHIP. This endowed scholarship was established by the late Dr. R. Glenn Hammonds (M.D. 1944). The income is used to provide financial assistance to worthy and needy medical students.

THE FRANK M. HANDLEY SCHOLARSHIP. This endowed scholarship was provided from the estate of Frank M. Handley (J.D. 1928).

EMILY AND H. CAMPBELL HAYNIE SCHOLARSHIP. In October 2001, the Emily and H. Campbell Haynie Scholarship was established in the medical school endowment fund to benefit medical students.

THE JAMES HOLLORAN SCHOLARSHIP. This endowed scholarship was established by the class of 1980 in memory of their classmate, "Ed" Holloran.

THE HARRY R. JACOBSON, M.D., AND JAN JACOBSON SCHOLAR-SHIP. This endowed scholarship fund was created through a bequest by the late Grace McVeigh to honor Vice Chancellor Jacobson and his wife Jan for their service to Vanderbilt University. The income is used to provide support to needy and worthy students in the School of Medicine.

THE HOLLIS E. AND FRANCES SETTLE JOHNSON SCHOLARSHIP FUND. This endowed scholarship was established by Hollis E. Johnson (M.D. 1921).

THE ERNEST G. AND MIRIAM H. KELLY SCHOLARSHIP. This endowed scholarship was established through the trust of Dr. Ernest G. Kelly (B.A. 1922, M.D. 1926) to provide scholarship support within the School of Medicine.

THE EARL A. AND FRANK B. KIMZEY SCHOLARSHIP. This endowed scholarship was established in 2012 through the estate of Mrs. Frances K. Riley to provide scholarship support to deserving students at the School of Medicine.

THE IKE J. KUHN FUND. This scholarship fund is provided by a bequest from the will of Mr. Ike J. Kuhn and is awarded in the School of Medicine to a worthy man or woman born and raised in any of the states commonly known as the "southern states."

THE ANN R. LIGHT SCHOLARSHIP FUND. This endowed scholarship was established by Ann R. Light for needy medical students.

THE DORIS M. AND FRED W. LOVE SCHOLARSHIP. The Love Scholarship was established by Dr. Fred W. Love (M.D. 1945) and Mrs. Love. This tuition scholarship is given periodically and covers four years of study.

THE CHARLES T. LOWE SCHOLARSHIP. This endowed scholarship was established in 2002 through a bequest from Charles T. Lowe (B.A. 1932, M.D. 1936). This scholarship is restricted to residents of Dallas County, Arkansas, Wilson County, Tennessee, or surrounding counties.

THE KONRAD LUX SCHOLARSHIP. This endowed scholarship was established by the will of Konrad Lux (M.D. 1925) to benefit students in the oral surgery program.

THE THOMAS L. MADDIN, M.D., FUND. This fund is provided by a bequest from the will of Mrs. Sallie A. C. Watkins in memory of Dr. Thomas L. Maddin.

THE JACK MARTIN SCHOLARSHIP FUND. This endowed scholarship was established in honor of Jack Martin (M.D. 1953).

THE MARGARET LOONEY MCALLEN SCHOLARSHIP. Established in 2005 by C. Ashley McAllen (M.D. 1987) to provide scholarship support to deserving students enrolled in the Vanderbilt University School of Medicine based on financial need.

THE ROBERT L. AND BILLYE MCCRACKEN SCHOLARSHIP. This endowed scholarship fund was established through the generosity of the late Dr. and Mrs. Robert McCracken. Dr. McCracken (M.D. 1939) was

a Nashville thoracic surgeon. The income is used to provide financial assistance to needy and worthy students enrolled in the School of Medicine.

THE PATRICIA AND EDWARD J. MCGAVOCK SCHOLARSHIP FUND. This endowed scholarship fund was established in 1998 through a bequest provision by the late Patricia McGavock of Old Hickory, Tennessee, to benefit students enrolled in the Vanderbilt University School of Medicine.

THE CHARLES AND EDITH MCGILL SCHOLARSHIP FUND. This endowed scholarship was established in 2000 through the proceeds of a life income trust set up by the late Charles M. McGill (M.D. 1935) and his wife, Edith, for the benefit of students enrolled in the Vanderbilt University School of Medicine.

THE BARTON MCSWAIN ENDOWED SCHOLARSHIP This endowed scholarship was established in 1994 with proceeds raised by the Vanderbilt School of Medicine Class of 1958 to honor the late Nashville pathologist H. Barton McSwain (B.A. 1927 M.D. 1930). The income is to be used to benefit students enrolled in the Vanderbilt University School of Medicine.

THE BESS AND TOWNSEND MCVEIGH SCHOLARSHIP FUND. This endowed scholarship was established in memory of her parents by Grace McVeigh (B.A. 1925) to provide full and partial tuition scholarships for the benefit of needy and worthy students in the School of Medicine.

MEDICAL STUDENT SCHOLARSHIPS GIFT FUND. Funds are available to needy students through gifts donated by alumni and friends of Vanderbilt School of Medicine.

THE H. HOUSTON MERRITT SCHOLARSHIP. This endowed scholarship was established by H. Houston Merritt (M.D. 1922).

THE JAMES PRESTON MILLER TRUST. This trust, left by the will of James P. Miller in memory of his father, James Preston Miller, provides funds to assist in the medical education of deserving young men and women at Vanderbilt University. Residents of Overton County, Tennessee, are to be given first preference, and other residents of Tennessee are to be given second preference.

THE ANN MINOT ENDOWED SCHOLARSHIP. This endowed scholarship was established in 1994 to provide need-based scholarships to students in the School of Medicine.

THE BARBARA D. MURNAN MEMORIAL SCHOLARSHIP. This endowed scholarship fund was established through a bequest provision by the late Barbara Murnan (B.A. 1934). The income provides merit-based awards to medical students. Partial-tuition scholarships are awarded periodically.

THE COLEMAN D. OLDHAM HONOR SCHOLARSHIP. This endowed scholarship was established through testamentary trust agreements by the late Coleman D. Oldham (B.A. 1924) and his sister Emma. Mr. Oldham lived in Richmond, Kentucky. The Oldhams stipulated that the scholarship be used to benefit worthy male students from Madison County, Kentucky, or if not available, worthy male students from Kentucky at large.

THE C. LEON PARTAIN, M.D., AND JUDITH S. PARTAIN SCHOLARSHIP FUND. This endowed scholarship was established in 1998 through a bequest of the late Grace McVeigh (B.A. 1925) for the benefit of needy and worthy students at Vanderbilt University School of Medicine. The scholarship honors Dr. and Mrs. Partain for their service to Vanderbilt University Medical Center during Dr. Partain's tenure as chairman of the Department of Radiology and Radiological Sciences, 1992–2000.

THE JONATHAN O. PARTAIN, M.D. AND VIRGINIA G. PARTAIN SCHOL-ARSHIP. This endowed scholarship was established in 2012 by Jonathan O. Partain (B.A. 1957, M.D. 1960, HO/FE 1960) to provide scholarship support based on financial need or academic merit to deserving students at the School of Medicine.

THE ALICE AND V. K. PATTERSON SCHOLARSHIP. This endowed scholarship was established in 2012 by Linda S. Young (B.A. 1981) and David W. Patterson (B.S. 1981, M.D. 1985) to provide financial support based on need or merit to deserving students at the School of Medicine. Preference in awarding should be given to students who add to the diversity of the university.

THE WILLIAM B. PIDWELL, M.D., AND SUSAN A. PIDWELL SCHOLAR-SHIP. Established in 1999 to provide support to talented and deserving students with demonstrated financial need engaged in the study of medicine. Preference is given to those students majoring in family medicine.

THE ELIZABETH CRAIG PROCTOR SCHOLARSHIP. This endowed scholarship was established through the generosity of Elizabeth Proctor and provides partial tuition to a worthy medical student chosen by the Dean of the School of Medicine. The first Proctor Scholarship was awarded to a student from the incoming class of 2004.

THE DARLINE AND ROBERT RASKIND SCHOLARSHIP. This endowed scholarship was established in 2012 through a bequest from Darline Brunson Raskind and Robert Raskind (M.D. 1938) to provide need-based scholarship support to deserving students at the School of Medicine.

THE THOMAS W. RHODES STUDENT SCHOLARSHIP FUND. Funds provided by the will of Georgine C. Rhodes were left to Vanderbilt University for the purpose of establishing a scholarship fund in the School of Medicine.

THE RILEY SCHOLARSHIP. This endowed scholarship was established by members of the Riley family: Harris D. Riley, Jr., M.D. (B.A. 1945 M.D. 1948); Frank Riley (B.A. 1949); Richard F. Riley, M.D. (B.A. 1946 M.D. 1948); and William G. Riley, M.D. (B.A. 1943 M.D. 1945).

THE CANBY ROBINSON SCHOLARSHIPS. Canby Robinson Scholarships provide full tuition for four years. The scholarships are awarded on the basis of demonstrated leadership and scholarship activities. Scholarship recipients are nominated by the Admissions Committee, and final selections are made by a committee from the Canby Robinson Society. These scholarships were established in 1986 by the Canby Robinson Society.

THE CANBY ROBINSON SOCIETY STUDENT SCHOLARSHIP BENE-FACTOR PROGRAM. Scholarships are made available to students from members who donate to this program.

THE ROSCOE R. ROBINSON, M.D., AND ANN ROBINSON SCHOLAR-SHIP FUND. This endowed scholarship was established in 1999 through a bequest by the late Grace McVeigh (B.A. 1925) for the benefit of needy and worthy students in the Vanderbilt University School of Medicine. The scholarship honors Dr. and Mrs. Robinson for their service to Vanderbilt Medical Center during Dr. Robinson's tenure as Vice Chancellor for Medical Affairs, 1981–1997.

THE DAVID E. AND BARBARA L. ROGERS ENDOWED SCHOLARSHIP. This endowed scholarship was established in 2003 by Barbara L. Rogers, the widow of Dr. David E. Rogers, to support students in the School of Medicine.

THE HELEN AND LOUIS ROSENFELD ENDOWED SCHOLARSHIP FUND. This endowed scholarship was established by Helen Rosenfeld, a Vanderbilt University alumna, and Louis Rosenfeld (M.D.1936).

THE GEORGE E. ROULHAC MEMORIAL SCHOLARSHIP FUND. This fund was established in 1994 through a gift from the estate of Dr. Roulhac (M.D. 1939). It provides tuition support for medical education.

THE WILLETT H. "BUDDY" RUSH SCHOLARSHIP. Established in memory of Dr. Rush (M.D. 1941), this scholarship honors the dedication he showed to the practice of medicine and the Frankfort, Kentucky, community. Awards are given in order of preference to students from Frankfort, Kentucky, the bluegrass region of Kentucky, and then the state of Kentucky.

THE RICHARD M. SCOTT FINANCIAL AID PROGRAM. This endowed scholarship was established by the medical class of 1988 to honor Richard M. Scott, director of financial aid for the School of Medicine from 1970 to 1987.

THE JOHN SECONDI SCHOLARSHIP FUND. This endowed scholarship was established in memory of Dr. John Secondi (M.D. 1970).

THE JOHN N. SHELL ENDOWMENT FUND. This scholarship fund is provided by a bequest from the will of John N. Shell.

THE ETHEL AND LOUIS SHIVITZ SCHOLARSHIP. This endowed scholarship was established in 2012 by Ira Alan Shivitz (M.D. 1978) to provide financial support based on need or merit to deserving students at the School of Medicine. Preference in awarding should be given to students who encourage diversity through their commitment to lesbian, gay, bisexual, or transgender awareness at Vanderbilt.

THE LESLIE M. SMITH AND EVELYN C. SMITH SCHOLARSHIP ENDOW-MENT FUND. This endowed scholarship fund was established in 1998 by Mrs. Evelyn Clark Smith, widow of Dr. Leslie McClure Smith (M.D. 1930), to be used to assist needy medical students. Preference is given to students from New Mexico and Kentucky.

THE FRANK C. AND CONNIE EWELL SPENCER MEDICAL SCHOLAR-SHIP FUND. This endowed scholarship fund was established in 1997 by Dr. Frank Cole Spencer (M.D. 1947) and his wife, Connie Ewell Spencer (B.A. 1946), to honor his medical class of 1947 on the occasion of its 50th reunion. The scholarship is used to assist worthy students who would not otherwise be able to afford to attend the School of Medicine.

THE DOROTHEA AND JOSEPH G. SUTTON SCHOLARSHIP IN MEDICINE. This scholarship was established in 1995 through a gift from the estate of Dr. Sutton (M.D. 1922) for the benefit of students with financial need who are pursuing the study of medicine.

THE HARLAN HOWARD TAYLOR SURGICAL SCHOLARSHIP. This endowment scholarship fund was established through the proceeds of a life income trust set up by the late Dr. Harlan Howard Taylor to benefit medical students going into surgical fields.

THE BETTYE SUE AND JOHN C. THORNTON, JR. SCHOLARSHIP. This endowed scholarship was established in 2013 through a bequest from John C. Thornton, Jr., to provide scholarship support for deserving students at the School of Medicine.

THE CORNELIUS VANDERBILT SCHOLARSHIPS. The Cornelius Vanderbilt Scholarships are awarded to individuals identified as having a high likelihood of advancing the leadership goals of the school, while nurturing a rich education environment by assuring racial, economic, and social diversity, as well as a diversity of talents, interests, and prior accomplishments.

THE VANDERBILT MEDICAL SCHOOL SCHOLARSHIP FUND. This endowed scholarship fund was established in August 2000. The income from this endowment is to be used to provide unrestricted scholarship support to students within the School of Medicine.

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

THE IRENE GEORGIA BEDFORD WATERS SCHOLARSHIP This scholarship was established by W. Bedford Waters (M.D. 1974) in honor of his mother, Irene. The scholarship benefits medical students who have demonstrated financial need, with first preference going to minority students.

THE FRED C. WATSON MEMORIAL SCHOLARSHIP. This scholarship is made on the recommendation of the School of Medicine to students selected by a committee based in Lexington, Tennessee, to students who are graduates of Lexington High School and/or are residents of Henderson County.

THE JOE AND HOWARD WERTHAN FOUNDATION FUND. The funds made available by this foundation to Vanderbilt University are to be given to those students in the School of Medicine needing financial assistance.

THE JONI P. WERTHAN SCHOLARSHIP. This endowed scholarship was established in 2010 by Joni P. Werthan in honor of Martha Cheatham, a beloved friend. The scholarship provides financial support for one or more outstanding students at the School of Medicine who demonstrate a passion for serving the indigent patient population.

THE JAMES WHITAKER WEST SCHOLARSHIP. This endowed scholar-ship was established in 2011 by Ruth B. and John Thomas West (B.A. 1949, M.D. 1951) to provide financial support based on need or merit to deserving students at the School of Medicine.

THE DR. DAVID HITT WILLIAMS MEMORIAL SCHOLARSHIP FUND. This fund was established in 1998 through the bequest of Eugenia F. Williams

in memory of her father, a successful financier, professor of obstetrics and gynecology, and medical practitioner in Knoxville, Tennessee. The income from the endowment is to be used to assist worthy and deserving students in the School of Medicine.

THE WILLS SCHOLARSHIP FUND. Established in 2003 by W. Ridley Wills (B.A. 1956) and Irene Jackson Wills through the Wills Foundation to provide assistance to worthy medical students based on financial need.

THE CHARLES E. AND MILDRED WORK SCHOLARSHIP. This endowed scholarship was established through a bequest gift by the late Dr. Charles E. Work (M.D. 1935). The income is used to provide financial aid to needy and worthy medical students.

#### **Other Scholarships**

Other scholarships are available outside of the institutional financial aid program. They are as follows:

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

THE ESSERMAN FAMILY MEDICAL SCHOLARSHIP. This endowed scholarship was established in 2012 by Charles and Ivette Esserman to provide scholarship support based on need or merit to deserving M.D. or M.D./Ph.D. students in the School of Medicine.

THE ELBYRNE GRADY GILL SUMMER RESEARCH SCHOLARSHIPS IN OPHTHALMOLOGY AND OTOLARYNGOLOGY. These scholarships provide support for medical student summer research in the areas of ophthalmology and otolaryngology.

THE GOODMAN FAMILY MEDICAL EDUCATION FUND. This endowed fund was established in 2010 by the Mt. Brilliant Foundation to support medical school educational scholarship to facilitate the training of leaders and scholars in medicine.

THE MARY AND WILLIAM O. INMAN JR. SCHOLARSHIP FUND. This fund was established in 1985 by Miss Grace McVeigh (B.A. 1925) to benefit M.D./Ph.D. students.

THE MEADE HAVEN SCHOLARSHIPS IN BIOMEDICAL SCIENCES. Meade Haven scholarships in biomedical sciences have been endowed to provide support for medical students who have made a serious career commitment to obtain advanced experience and training in research in the biomedical sciences.

THE ANN MELLY SCHOLARSHIP IN ONCOLOGY. This scholarship is to provide medical students the opportunity to conduct research in the field of oncology. The scholarship recipients, to be known as Melly Scholars, would receive an integrative experience linking the basic sciences with their clinical outcomes. Such scholarships give in-depth exposure to research that addresses the cause and treatment of cancer. The scholarships have proven to be excellent experiences for medical students trying to determine whether to pursue a career in oncology and academic medicine. In the unlikely event that the field of oncology should be transformed or go out of existence, such as has happened with programs studying diseases like polio and tuberculosis, then in consultation with the donor and/or donor's children or grandchildren, another field of research would be chosen for the scholarship. This is to ensure the continued recognition of Ann Melly's work in research and education.

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

THE HERBERT M. SHAYNE ENDOWMENT. Established in 2003 by the Shayne Foundation to provide tuition support to M.D./Ph.D. students during the M.D. portion of their training and includes a research laboratory stipend. The fund pays tribute to Herbert M. Shayne, a long-time supporter and board member of the medical school.

THE VANDERBILT PRIZE IN BIOMEDICAL SCIENCES SCHOLARSHIP. The Vanderbilt Prize nurtures the career, research, and studies of a promising woman beginning her M.D./Ph.D. studies at Vanderbilt and includes a funded scholarship for the student winner.

THE THOMAS HUGGINS WINN SCHOLARSHIP. Established in 1988 through a bequest from Fanny Edith Winn to benefit M.D./Ph.D. students.

#### **Revolving Loans**

THE AMA/ERF LOAN FUND. Funds are available to needy students through gifts donated by the American Medical Association Education and Research Foundation.

THE F. TREMAINE BILLINGS REVOLVING STUDENT LOAN FUND. Established by Elizabeth Langford and friends, this loan fund honors Dr. Billings and his many contributions as friend and internist. It is to be used for the education of worthy medical students.

THE BLOSSOM CASTER LOAN FUND. This fund was established by Milton P. Caster (M.D. 1949) in honor of his mother, Mrs. Blossom Caster.

THE O. D. CARLTON II LOAN FUND. This revolving loan fund was established by Hall Thompson in honor of O. D. Carlton II for needy third- and fourth-year medical students.

THE EDWARD F. COLE REVOLVING MEDICAL LOAN FUND. These funds are made available to students through contributions from Dr. Edward F. Cole, a Vanderbilt Medical alumnus.

THE FRANK M. DAVIS AND THEO DAVIS STUDENT LOAN FUND. This endowed loan was established by Frank M. Davis (M.D. 1934).

THE MAX EISENSTAT REVOLVING STUDENT LOAN FUND. This fund was established to honor the memory of Dr. Max Eisenstat.

THE TINSLEY HARRISON LOAN FUND. This fund was established to assist needy and worthy medical students by Dr. T. R. Deur, a Vanderbilt Medical School alumnus, in memory of Dr. Harrison, a former teacher and clinician at the school.

THE GALE F. JOHNSTON LOAN FUND. The funds donated by Gale F. Johnston are to be used as a revolving loan fund for students in the School of Medicine.

THE W. K. KELLOGG FOUNDATION LOAN FUND. This fund was established through donations from the W. K. Kellogg Foundation.

THE LAUDIE AND EDITH MCHENRY REVOLVING LOAN FUND. This fund was established with the proceeds from the trust of Dr. Laudie E. McHenry (M.D. 1953) for students enrolled in the School of Medicine.

THE VANDERBILT MEDICAL FACULTY LOAN FUND. This fund is made available by donations from members of the School of Medicine faculty to be used to defray the educational costs of disadvantaged students.

THE MEDICAL LOAN FUND OF LIFE AND CASUALTY INSURANCE COMPANY OF TENNESSEE. Through donations from the Life and Casualty Insurance Company of Tennessee, needy students are provided revolving student loans.

THE MEDICAL SCHOOL STUDENT AID LOAN FUND. This fund is made possible through contributions from alumni and friends.

THE J. C. PETERSON STUDENT LOAN FUND. This fund was established in memory of Dr. J. C. Peterson to provide loan monies for deserving medical students.

THE COLONEL GEORGE W. REYER MEMORIAL LOAN FUND. This fund was established by Colonel George W. Reyer (M.D. 1918).

THE LEO SCHWARTZ LOAN FUND. This loan fund was established through contributions from Dr. Leo Schwartz.

THE ROBERT E. SULLIVAN MEMORIAL LOAN FUND. Through the generosity of Robert E. Sullivan, a fund has been established to assist worthy and deserving medical students.

THE ROANE/ANDERSON COUNTY MEDICAL SOCIETY FUND. This revolving loan fund is given to a needy medical student, with preference given, when possible, to students from Roane, Anderson, and Morgan Counties of Tennessee.

THE THOMPSON STUDENT LOAN FUND. This fund is to be used as a revolving loan fund for students in the School of Medicine from Middle Tennessee.

THE VANDERBILT MEDICAL SCHOOL ALUMNI REVOLVING LOAN FUND. This fund was established through contributions from alumni.

# Financial Information for Medical Master's Degrees and Other Doctoral Programs

Information for the 2013/2014 academic year is as follows.

#### **Doctor of Audiology and Master of Education of** the Deaf and Master of Science (Speech-Language Pathology)

Tuition, 1st, 2nd, 3rd years \$33,840 Tuition, 4th year 6,696

The total estimated cost of attendance for a first year student is \$64,748.

## Master of Science in Medical Physics

Tuition, 1st year \$31,830 Tuition, 2nd year 21,220

The total estimated cost of attendance for a first year student is \$62,738.

#### **Doctor of Medical Physics**

Tuition, 1st, 2nd years \$33,150 Tuition, 3rd, 4th years 27,855

The total estimated cost of attendance for a first year student is \$64,058.

## Master of Public Health and Master of Science in Clinical Investigation

Tuition, 1st year \$31,875 Tuition, 2nd year 15,940

The total estimated cost of attendance for a first year student is \$62,783.

# Archivedicals **Master of Laboratory Investigation**

Tuition (12 hours at \$1,325/hr.) \$15,900

The total estimated cost of attendance for a first year student is \$46,808.

#### **Master of Health Professions Education**

\$23,820

The total estimated cost of attendance for a first year student is \$54,728.

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

#### Other Fees

Student health insurance fee	\$2,239
Activities and recreation fee	414
Activities and recreation fee (summer)	73
Transcript fee (one time only)	30
Student Health Service fee	65
Verification fee	150

#### **Payment of Tuition and Fees**

Fall semester tuition, fees, and other university charges are due and payable by 14 August. Spring semester tuition, fees, and other university charges are due and payable by 2 January. Summer charges are due and payable by 30 June.

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Additional information can be found at www.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 will be made after the tenth week in any semester.

Withdrawal prior to the end of	Reduction
1st full week	100%
2nd full week	90%
3rd full week	85%
4th full week	80%
5th full week	75%
6th full week	65%
7th full week	60%
8th full week	50%
9th full week	45%
10th full week	40%

No refund after the 10th full week.

#### **Late Payment of Fees**

Charges not paid by 14 August will be automatically deferred, and the student's account will be assessed a monthly late payment fee at the following rate: \$1.50 on each \$100 that remains unpaid after 14 August (\$5 minimum). An additional monthly late payment fee will be assessed unless payment is received in full on or before the end of each month, and late payment fees will continue for each month thereafter based on the outstanding balance unpaid as of the end of each month. All amounts deferred are due not later than 15 October for fall semester and 15 March for spring semester. Graduating students are not allowed to defer charges that are billed in advance for the final semester.

## **Financial Clearance**

Students may not be allowed to register for any semester if they have outstanding unpaid balances for any previous semester. No transcript, official or unofficial, will be 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 will be issued. Information will be provided by the university Office of International Student and Scholar Services.

#### **Financial Assistance**

Approved educational expenses are met with funds from a combination of sources. Government loans that furnish significant loans to students are the Federal Direct Unsubsidized Loan and Federal Direct Graduate PLUS loans. Private loans are also available to international students. Additional information and applications for financial aid are online at <a href="https://medschool.vanderbilt.edu/financial-services/">https://medschool.vanderbilt.edu/financial-services/</a>. Applicants desiring more specific information about financial aid resources should contact the Medical School Office of Student Financial Services.

# 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 Science (Speech-Language Pathology), Master of Medical Physics, Master of Science in Clinical Investigation, Master of Laboratory Investigation, Master of Public Health, and Master of Health Professions Education. Courses in the School of Medicine are offered in both semester and year-long formats. Courses leading to the M.D. degree 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.

Courses leading to the Doctor of Medicine

#### Anatomy

ANAT 5685. Advanced Study and Skills in Regional Anatomy. The goal of this course is to provide students with an opportunity to advance their understanding of gross anatomy in areas that will inform their future residency and practice. Typically students will perform and demonstrate dissections in their future region of interest; it is also possible to arrange for an experience that spans other anatomical disciplines beyond gross anatomy such as histology and neuroanatomy. Students will pursue an advanced topic in their future residency field and examine pertinent anatomical considerations in this focal region of interest. Each student will meet with the course director in advance of the elective to design and outline an individualized learning plan. Students will be required to demonstrate the knowledge of the relevant clinical anatomy in the form of an oral presentation to the anatomical faculty and others in the course. This course may be taken in discontinuous segments to accommodate the specialized content needs of the individual student and/or to accommodate the travel demands during the interviewing season. The course is available from November through February. Fourth year.

#### 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 5500. Basic Anesthesiology.** This pre-clinical elective course is for students at the completion of their first-year course work. It involves spending 2–3 hours per day between 0630–0830 hours. Students will

rotate in the OR, ICU, acute pain service, OB Anesthesia, and PEDS Anesthesia. Students will experience all facets of anesthesiology. Summer following first year.

ANES 5611. Clerkship in Anesthesiology. This course is a four-week elective providing a multidisciplinary experience in Anesthesiology so that all students will rotate through the following venues: Adult anesthesia at VUH and/or VA; Cardiothoracic anesthesia; Pediatric anesthesia; OB Anesthesia; Neuro ICU/SICU/BICU; Acute pain service. In addition to participating in departmental lectures for residents, Grand Rounds, and M&M, students will be provided with a textbook, *Basics of Anesthesia*, 5th edition, and *The Difficult Airway* course manual for use during the elective. Students will keep the SEA curriculum cards and a departmental manual that are given at the beginning of the course. Student specific lectures will also be given during the course. Each student will take one evening call and one weekend day call to provide exposure to anesthesia for trauma and emergency surgery. Prior experience in anesthesia is not required. Fourth year.

**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 6150.** Special Research Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**ANES 6200.** Special Study—Pre-Clinical. Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

ANES 7100. Special Clinical Study—Non-VU. 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.

## Biochemistry

**BCHM 5100. Vanderbilt Student Volunteers for Science.** Medical students choosing the Vanderbilt Student Volunteers for Science (VSVS) elective will be placed in teams of three or four and go to middle school classrooms ten times during the semester to teach science lessons. Lesson manuals and kits are provided. The coordinator of VSVS will arrange times for the class visits based on VSVS team and teacher schedules. Total time commitment for the semester is 15 hours. This includes a practice session, ten one-hour classes for science lessons, and estimated travel time to and from a middle school. First and second year.

**BCHM 5330. Molecular Aspects of Cancer Research.** The course will consist of a focused series of seminars and discussions to explore the molecular basis of cancer. Seminars will rely heavily on extramural speakers who have recognized expertise in selected research areas. Students meet with each speaker for one hour immediately after each seminar. This provides an opportunity for students to meet internationally recognized scientists from a variety of academic and research institutions. Discussion sections will be led by a faculty member after each series of three to four seminars. This course may be taken for graduate credit by MSTP (M.D./ Ph.D.) students by registering through the Graduate School for Biochemistry 337. Prerequisite: Biochemistry or faculty permission.

**BCHM 6150.** Special Study in Biochemistry Research. Students select a mentor and topic for a four-week research elective. Approval required. Fourth year.

**BCHM 6200. Special Study—Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

## Biomedical Informatics

**BMI 6150.** Special Research Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**BMI 6200.** Special Study—Pre-Clinical. Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**BMI 7150.** Special Study in Biomedical Informatics. Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

## Cancer Biology

**CABI 6150.** Special Research Study—Cancer Biology. Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**CABI 6200. Special Study—Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

# Cell and Development Biology

**CBIO 6150. Special Research Study—Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**CBIO 6200. Special Study—Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

# **Emergency Medicine**

**EM 5100. EMS1: Introduction to PreHospital Care/EM.** The intent of this elective is to provide the student with an introductory exposure to emergency medicine and pre-hospital care along with certain useful skills not usually learned in the first two years of medical school. Instructors include Emergency Medicine faculty and resident physicians, paramedics, nurses, and representatives from other disciplines with emergency medicine affiliations. Topics include airway management, suture lab, ortho lab, ultrasound, and case presentations. The student will also ride with paramedic ambulance crews and spend time in the Adult Emergency Department and Level One Trauma Center. First and second year.

**EM 5200. EMS I: Introduction to Prehospital Care and EM – TA.** This course is offered to medical student teaching assistants only. Faculty approval required. Second-year students.

**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 5350.** Medical Photography. Medical photography is a powerful tool to correlate classroom coursework with disease and injury presentation in the clinical setting. This 10-week elective will equip students with the fundamentals of general and medical photography, proper photographic techniques, practical clinical experience, and continual constructive feedback. Students will complete five 2-hour shifts in the Vanderbilt Emergency Department practicing photography skills throughout the ten week period in addition to the five scheduled meetings. Upon course completion, students will understand; The fundamental approaches to maximizing image quality, how to use medical imaging as an asset in clinical applications, and how to evaluate and knowledgeably distinguish well-done medical photos. Furthermore, students will have had hands-on-skills and presentation practice, as well as a possibility of journal publication. No prior knowledge, equipment, or experience is needed. First and second year.

EM 5950. Emergency Medicine. This required four-week clerkship introduces the senior medical student to the specialty of emergency medicine and reviews principles of emergency care that will benefit a graduate entering any specialty. Eleven clinical shifts spread across three different Emergency Departments during the month will offer students an opportunity to care for adult and pediatric patients with a variety of complaints. They will work closely with faculty and senior residents to formulate treatment plans and participate in procedures and other therapeutic interventions. Optional experiences with ground EMS, Lifeflight, and Emergency Ultrasound are also available. This clinical clerkship also has a significant didactic component, and students will usually attend 3-5 daily interactive lectures per day on weekdays. Afternoon lab sessions will allow practice of airway skills, splinting, and emergency procedures. Students will receive both BLS and ACLS training during the rotation. While this required clerkship is time intensive, and the required elements fill the scheduled four weeks, the course director will work with students to the extent possible to manage the scheduling challenges that may be encountered during residency interview season. Prerequisite: Completion of all third-year core clerkships. Registration occurs by lottery. Fourth year.

**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 6150.** Special Research Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**EM 6200.** Special Study—Pre-Clinical. Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**EM 7100.** Special Clinical Study—Non-VU. 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.

#### Interdisciplinary Studies

**IDIS 5001. Research I.** 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 5012. Introduction to Research/Biostatistics.** This course will introduce basic research to medical students by walking the students through important aspects of quality research enabling them to read and evaluate existing medical publications and preparing them for evidenced based topics. The following will be covered: designing a project; displaying data; confidence intervals and hypothesis testing; choosing the right test, power, and sample size; modeling—multiple linear and logistic regression and data collection. First year.

IDIS 5012. Project-Based Biostatistics. This course is designed for students interested in developing skills required to explore, describe, and analyze data using introductory statistical concepts. It will develop students' ability to write and critique research studies. For students who have not had much exposure to biostatistical concepts, this course is strongly recommended to prepare for the evidence-based medicine sessions in Disease. Diagnosis, and Therapeutics; the required DD&T course assumes students' ability to understand measures of association, inferences, confounders, study design, power, bias, and more. Students will use these skills to create their own research project based on instructor provided data. The course will be "hands on" allowing students to learn how to 1) generate testable hypotheses; 2) conduct a literature review; 3) conduct descriptive and inferential statistics; 4) generate tables and figures; 5) manage data; 6) test hypotheses; and 7) report and interpret results. The course will have limited outside assignments, a moderate online teaching component, small interactive lectures, and a large amount of in-class facilitator guided but primarily independent work practicing statistical concepts using the statistical program, RStudio. No prior statistical background is required. First year.

IDIS 5015. Interprofessional Learning Clinic and Seminar I. This course for participants in the Vanderbilt Program in Interprofessional Learning (VPIL) will take an innovative team-based and patient-centered approach to health care, including work-based learning, longitudinal clinical experiences, and work in interprofessional teams. Working-learning teams, including professionals and students from medicine, nursing, pharmacy, and social work, will work in clinics and in groups. Clinic activities will include home visits, group visits, and patient education sessions. Teams will meet approximately bi-weekly for a case-based seminar with other classroom-based activities, and teams may develop new projects in community interventions, support groups, home visits and coaching, and outcomes measurement. Student teams will also participate in three Standardized Patient sessions over the year at the Center for Experiential Learning and Assessment (CELA). Approval required. First year.

IDIS 5016. Interprofessional Learning Clinic and Seminar II. This course for the continuing participants in the Vanderbilt Program in Interprofessional Learning (VPIL) will take an innovative team-based and patient-centered approach to health care, including work-based learning, longitudinal clinical experiences, and work in interprofessional teams. Working-learning teams, including professionals and students from medicine, nursing, pharmacy, and social work, will work in clinics and in groups. Clinic activities will include home visits, group visits, and patient education sessions. Teams will meet approximately bi-weekly for a case-based seminar with other classroom-based activities, and teams may develop new projects in community interventions, support groups, home visits and coaching, and outcomes measurement. Teams will participate in a capstone design challenge at the end of the year as well as a continuation of their Standardized Patient experience at the Center for Experiential Learning and Assessment (CELA). Approval required. Second year.

**IDIS 5025. Molecular Foundations of Medicine.** Molecular Foundations of Medicine is designed to familiarize students with the cellular structures, biomolecules, and processes that constitute life, human health, and disease at the molecular level. Material will provide a mechanistic foundation for the medical curriculum and equip students to adapt and practice medicine in the future. The course will employ an integrated approach to teach underlying principles of biochemistry, cell biology, and genetics with an emphasis on human systems and medical conditions. The inclusion of clinical correlation sessions, small groups, and laboratory sessions will

further integrate and broaden course material and relate molecular processes to the study of human disease. First year.

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 health care 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 health care 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 5035. Structure, Function, and Development. The objective of this course is to provide students with the means to develop an effective understanding of the normal micro- and macroscopic structure, function, and development of the human body that will enable them to distinguish and begin to understand the impact of malformation, trauma, disease, degeneration, and dysfunction, and to envision the goal of therapeutic intervention and restoration. In the short term, it aims to prepare medical students for subsequent courses (Disease, Diagnosis, and Therapeutics) and clinical rotations through the development of an appropriate vocabulary, a knowledge base of essential information, and an awareness of the means to gain further information when required. In the long term, it aims to prepare physicians to appreciate the importance of an understanding of structure, function, and development as it is applied in clinical practice and to have a knowledge base appropriate for a medical physician, allowing them to communicate/interact meaningfully with those in other health specialties and participate in continuing medical education and life-long learning. The course will employ a coordinated, integrated approach to the presentation and learning of the disciplines of human gross anatomy,

cell and tissue biology (histology), human development (embryology), and physiology in a context of clinical application. First year.

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 pathophysiology 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 5046. College Colloquium.** This course will be facilitated by the College Mentors and will include interactive discussions within College groups. Content areas include narrative medicine, meta/neurocognition (eg: critical thinking, learning, decision-making, the nature of error, language/communication, uncertainty, mindfulness, empathy), medical ethics, professionalism, health care policy and clinical reasoning. An experiential component will include weekly interactions with a clinical preceptor and group debriefing of those clinical experiences. From a sound basis in human cognition, students will be intellectually and professionally prepared for engaging in intricate topical discussions in medical ethics, health care policy, and the complexities of empathy and the patient-doctor relationship. First year.

IDIS 5047. Learning Communities I. The Learning Communities 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 health care 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 health care 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. Required. First year.

**IDIS 5048.** Continuity Clinical Experience I. The goal of this required course is to teach students to deliver personalized care for patients within a system of care. Active student engagement in the care team at a single clinical site will constitute a major element of this course. The course also includes classroom and self-directed learning components that will provide foundational knowledge and skills. As a part of the course, students will be expected to follow a small panel of patients over time and across care settings. Clinic sessions will take place weekly, and students will continue in their clinical sites throughout their four years of training. First year.

**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, teambased 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 5070. Disease, Diagnosis, and Therapeutics. The objectives of this course are to teach the pathogenesis and manifestations of disease and to introduce the fundamentals of diagnosis and pharmacologic as well as nonpharmacologic therapy. Diseases, their recognition, and treatment will be presented in a systems-based format using an interdisciplinary approach to allow integration of pathobiology, clinical diagnosis, and therapy in a comprehensive manner. Principles of pharmacologic therapy will be presented in the context of relevant pathophysiology and how humans react to drug therapies. The course will utilize a variety of teaching modalities that include lectures, laboratory sessions focused on the gross and microscopic pathology of disease, and technology-based modalities that include computer-based lessons, as well as formats that will promote critical thinking (small group sessions, case-based learning that utilizes patients, and problem-based cases that will be taught by both faculty and students). Laboratory and imaging diagnosis will be presented in the context of the diseases to which these foundations are applied in order to prepare students for the next phase of their education in the clinical setting. Basic principles of radiologic imaging will be supplemented by correlation with manifestations and diagnosis of disease. Emphasis will be placed on the use of laboratory data in solving clinical problems. The role of nutrition in disease prevention and management will also be emphasized. The impact of disease and its treatment on public health and society as well as strategies for prevention will be explored. Second year.

**IDIS 5072. Emphasis: Biomedical Informatics.** In consultation with faculty, each student who has selected this Emphasis area identifies a project and a mentor in Biomedical Informatics. After developing a research plan for the project, students carry out their research and present the results in a report in publishable form. Second year.

**IDIS 5073. Emphasis: Community Health Initiatives and Outreach.** In consultation with faculty, each student who has selected this Emphasis area identifies a project and a mentor in Community Health Initiatives and Health Outreach. After developing a research plan for the project, students carry out their research and present the results in a report in publishable form. Second year.

**IDIS 5074. Emphasis: Global Health.** In consultation with faculty, each student who has selected this Emphasis area identifies a project and a mentor in Global Health. After developing a research plan for the project, students carry out their research and present the results in a report in publishable form. Second year.

**IDIS 5075. Patient, Profession, and Society.** This required second year course is designed to provide formal and experiential learning around critical population, social, cultural, and interpersonal issues associated with

the practice of medicine. There are two major segments of the course. The fall segment focuses on preventive medicine, epidemiology, and population Health. The theme for the spring segment is patient-centeredness. It is designed to enhance students awareness of the patients perspective on his or her illness or social condition and help ¿hard wire¿ specific communication skills which help to make the patient the center of his/her health care experience. Select PPS sessions throughout the year are delivered via the college-based Learning Community format. Second year.

**IDIS 5076. Emphasis: Public Health Care.** In consultation with faculty, each student who has selected this Emphasis area identifies a project and a mentor in Healthcare and Public Health Research and Management. After developing a research plan for the project, students carry out their research and present the results in a report in publishable form. Second year.

**IDIS 5077. Emphasis: Laboratory-Based Biomedical Research.** In consultation with faculty, each student who has selected this Emphasis area identifies a project and a mentor in Laboratory-Based Biomedical Research. After developing a research plan for the project, students carry out their research and present the results in a report in publishable form. Second year.

**IDIS 5078. Emphasis: Medical Education.** In consultation with faculty, each student who has selected this Emphasis area identifies a project and a mentor in Medical Education. After developing a research plan for the project, students carry out their research and present the results in a report in publishable form. Second year.

**IDIS 5080.** The Brain and Behavior. The Brain and Behavior module is directed towards helping students acquire a solid understanding of the human central nervous system and human behavior. The format of the module will include lectures, lab exercises, small group discussions, and patient and case presentations. In conjunction with Physical Diagnosis, the skills training includes psychiatric interviewing, fundus exam, and neurological exam. The Brain and Behavior module will integrate three areas of medical science: (1) neuroanatomy, physiology, and biochemistry; (2) psychopathology and systems neuroscience; and (3) pathology, pharmacology, and radiology. Together, the course will provide the foundation necessary for an understanding of the clinical fields of Neurology and Psychiatry. Second year.

**IDIS 5082. Emphasis: Patient-Oriented Research.** In consultation with faculty, each student who has selected this Emphasis area identifies a project and a mentor in Patient-Oriented Research. After developing a research plan for the project, students carry out their research and present the results in a report in publishable form. Second year.

**IDIS 5084. Emphasis: MSTP Project.** Students in the joint M.D./Ph.D. program satisfy the Emphasis Program requirement by completing three lab rotations during the first and second year of MD training.

**IDIS 5090.** Capstone (P/F). The goal of this four-week course for fourth-year students is to "spiral back" to basic sciences. Students will gain insights into how advances in basic sciences have impacted clinical practice. Eight diseases or cases will be covered (two per week), each led by an expert in the fields. Possible topics covered will include obesity, vision loss, post-traumatic stress disorder, rheumatoid arthritis, trauma, colon cancer, miscarriage, and staphylococcal infections. There will be a few hours of lectures and small group discussions with ample time provided for student-directed learning and discovery. Fourth year.

**IDIS 5100. Primary Care Medicine, VUH.** All fourth-year students will have a required four-week unit in an ambulatory primary care setting. Students will choose an experience in outpatient internal medicine, family medicine, or pediatrics. Practice sites include ambulatory medicine or pediatric clinics in the community. The clinic experience is supplemented by a home visit to follow-up on a patient seen during the ambulatory clinic experience along with a home health or hospice visit. Prerequisite: Medicine 5020, Pediatrics 5020, Surgery 5020. Fourth year.

**IDIS 5110.** Communicating Unexpected Outcomes and Errors. Physicians face a variety of challenges when confronted with unexpected outcomes events and medical errors. These include dealing with patient/family perceptions or care provided, their expectations for error resolution, and potential institutional costs. Picking up where the VMS 3 Intersession

experience on communicating about obvious errors left off, this interactive case-based session teaches disclosure strategies in increasingly complex circumstances involving uncertainty about errors and outcomes, situations involving multiple services, and scenarios where patients believe an error has occurred, but care was excellent. Disclosure-related principles and tools are provided, and cases are designed to provoke consideration of pros and cons of communication strategies using a balance beam approach. The required session concludes with discussion of the impacts of medical error involvement on health care professionals. Fourth year.

**IDIS 5150. Primary Care Medicine—Non-VU.** Students may arrange a primary care experience outside of Nashville, subject to the approval of the course directors. Fourth year.

**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' fields of research. Open to students in the Medical Scientist Training Program only. Second year.

IDIS 5210. College Colloquium II. The College Colloquium II 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 health care 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 College Colloquium fosters student professional development. College Colloquium 2 serves to expand on many of the issues from the original College Colloquium including the personal areas of metacognition and ethics, as well as the exploring new concepts of leadership as well as knowledge and understanding of the broader health care 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 College Colloquium will provide the nurturing environs to maximize student development as professionals. Second year.

**IDIS 5215. Continuity Clinical Experience II.** The goal of this required course is to teach students to deliver personalized care for patients within a system of care. Active student engagement in the care team at a single clinical site will constitute a major element of this course. The course also includes classroom and self-directed learning components that will provide foundational knowledge and skills. As a part of the course, students will be expected to follow a small panel of patients over time and across care settings. Clinic sessions will take place weekly, and students will continue in their clinical sites throughout their four years of training. Required. Second year.

**IDIS 5230. Beginner Spanish for the Medical Professional.** Beginner Spanish for the Medical Professional includes a comprehensive grammar and vocabulary review, emphasizing communication between the health care provider and the Latino patient. The course underscores current essential cultural, demographic, and public policy issues affecting health care delivery to the Latino population in the United States. Class

is conducted entirely in Spanish, however no previous knowledge of the language is required. First and second year.

IDIS 5233. Learning Communities. The Learning Communities course occurs during the student's clerkship year and builds on the student's experiences during the College Colloquium. Prior efforts addressed important professional development topics such as metacognition, clinical reasoning, ethics, narrative medicine, and health care delivery. The Learning Communities 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 course will continue to provide the nurturing environs to enhance student development as professionals.

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 health care 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 5235. Intermediate Spanish for the Medical Professional. Intermediate Spanish for the Medical Professional emphasizes spoken Spanish in the context of the health care provider and the Latino patient, including a comprehensive grammar review and offering extensive vocabulary related to the clinical setting. Cultural issues related to health care and the Latino patient are emphasized. Prerequisite: IDIS 5230 or faculty permission.

IDIS 5236. Let Your Life Speak: Authentic Decision Making for Your Medical School Career. This is a course designed to give students in their first or second year of medical school a unique opportunity to address issues of personal identity and self-care. This course will provide a forum for learning and dialoguing with other students about real-life issues that impact your personal development as a medical professional, with specific emphasis on some of the unique issues that face women in medicine. Questions such as "How will I choose a specialty?", "How will I integrate family with career?", and "How will I maintain my passion for medicine?" will be addressed as we consider the anatomy of the decision-making process. Class will be guided group discussion format with various female physician guest speakers and each student will also receive a one-hour personal coaching session with the instructor during the semester. First and second year.

**IDIS 5238. Wellness.** This course will allow students to dedicate structured time to the pursuit of a wellness activity that has meaning for them and will serve to inform their practice of lifelong wellness. Requirements: (1) Proposal and Timeline—include prose describing why this project is important to you and what you want to get out of your personal project; (2) Monthly check-ins with elective instructor; (3) Submit and discuss a piece of prose describing what you learned from your experience and how this experience will inform your practice of lifelong wellness. Students will submit a proposal using the Wellness elective form to the Office of Student Records. The proposal should include a description of the project and an estimated timeline. Approval of the advisory college director is required. First and second year.

**IDIS 5239.** Contemplative Mind in Medicine. This course will provide a forum for learning effective stress reduction skills, a supportive and safe environment where medical students have an opportunity to discuss their experiences of the early years of medical education, and a personal experience for the foundation of a behavioral and preventive perspective in their future practice of medicine. First and second year.

**IDIS 5242. Backstage Pass to the Wards.** This course will allow students the opportunity to complete a series of six to eight rotations throughout a variety of specialties and subspecialties at Vanderbilt University Hospital. It is expected that students will "shadow" and accompany the attending or resident physicians in their daily activities and participate in procedures/patient care at the discretion of their mentors. Opportunity for personal reflection and recording of insight into the various specialties will be possible via online forum and/or personal journal entries. Students are encouraged to ask relevant questions of their physicians and will be asked to reflect upon their experiences at the concession of all rotations. First and second year.

**IDIS 5246. Boost Your Brain with a Book.** Boost Your Brain with a Book is an elective for first and second year medical students. To obtain course credit, a student will read four books, one book per month for four months in the semester, and attend four book discussion sessions. Reading selections will vary. First and second year.

**IDIS 5247. Boost Your Brain with a Book II.** This is a continuation of the Fall Book Club elective.

**IDIS 5250.** Current Trends in the Financing of Health Care. This elective will examine how health care is financed and changes in store with the Health Care Reform Bill. It is designed to familiarize students with current mechanisms of health care reimbursement for hospitals, physicians, and other components of the heath care delivery system. Students will look at how the system will change under the Patient Protection and Affordability Act. First and second year.

IDIS 5252. Fundamentals of Health Care Quality Improvement. The elective course will provide students with an introduction to quality improvement science in a health care setting. The course will challenge students to think in an interdisciplinary manner when problem solving for quality improvement and will provide students with models and teambuilding strategies for leading quality improvement initiatives in a variety of organizational settings. This course will be offered to students from the schools of Medicine, Management, and Nursing. First and second year.

**IDIS 5254. Increasing Interpersonal Effectiveness: It IS All About Me.** This elective is for those who are curious to explore ways to be more successful and more effective with personal and professional relationships. It is about stepping out of our comfort zones and creating new ways of making meaning and emotion. Simple concepts with structured experiences will allow exploration of new ways of thinking about and acting in interpersonal situations. Enrollees are expected to participate fully and to support one another's learning through trust and a safe environment. First and second year.

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 associate 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 associate dean for medical student affairs will provide students with information that will aid their specialty selection and CV.

IDIS 5314. Clinical Critical Thinking and Logic. 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 the 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 the concept of critical thinking and asking the right questions. Learning resources will be provided to students and will consist mainly of electronic resources available on the internet and intranet followed by a question/answer session with an expert (physicians practicing in the respective field). At the conclusion of the two-week elective rotation, students will be able to describe and apply principals of critical thinking and reasoning to individual patient care as well as generating the relevant hypothesis on which future literature search and study design should rely. While problems in anesthesiology and critical care will serve as examples, the understanding and application of concepts and resources will be applicable to all fields of medicine.

**IDIS 5315. Continuity Clinical Experience III.** The goal of this required course is to teach students to deliver personalized care for patients within a system of care. Active student engagement in the care team at a single clinical site will constitute a major element of this course. The course also includes classroom and self-directed learning components that will provide foundational knowledge and skills. As a part of the course, students will be expected to follow a small panel of patients over time and across care settings. Clinic sessions will take place weekly, and students will continue in their clinical sites throughout their four years of training. Required. Third year.

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 twoweek 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 5320. Core Clerkships: Intersession.** The intersessions are intended to address important clinical skills that apply to all medical domains. This is a pass/fail course. Third year.

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, Ménière'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 and 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, speechlanguage 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 5415. Continuity Clinical Experience IV. The goal of this required course is to teach students to deliver personalized care for patients within a system of care. Active student engagement in the care team at a single clinical site will constitute a major element of this course. The course also includes classroom and self-directed learning components that will provide foundational knowledge and skills. As a part of the course, students will be expected to follow a small panel of patients over time and across care settings. Clinic sessions will take place weekly, and students will continue in their clinical sites throughout their four years of training. Fourth year.

IDIS 5610. Immersion: Advanced Perioperative Medicine: A Continuum of Care. This four-week course is designed to emphasize perioperative medicine as a continuum of care with application of both basic science and clinical knowledge from a variety of rotation experiences. Basic science topics (ischemia and ischemia-reperfusion injury, infection, inflammation, and coagulation) will be applied to specific disease processes, clinical decision-making, and perioperative outcomes. An emphasis is also placed upon the importance of coordination and collaboration of care with various medical specialists and health care team members to achieve optimal patient outcomes. Students will participate in the perioperative care of adult patients undergoing elective and emergent surgical

procedures from the preoperative evaluation through the duration of hospital stay. The pathophysiology and clinical implications of both acute and chronic disease processes will be considered with a special emphasis on coronary artery disease, obesity, COPD, diabetes, peripheral vascular disease, and acute kidney injury. This unique opportunity will allow the student to participate in the entire continuum of perioperative care and interact with numerous medical/surgical specialties and other health care disciplines. To facilitate integration of comprehensive knowledge and skills acquired from prior medical school experiences, patient selection will be based upon complexity of both the medical history and surgical disease process as well as the anticipated intensity of care. Clinical venues include VPEC, operating room, PACU, ICU, wards, cardiac procedure settings, blood bank, radiology, and specialty clinics. Clinical and didactic course instructors represent the following specialties: anesthesiology and critical care, surgery, pathology, radiology, internal medicine and medicine subspecialties (cardiology, pulmonary, nephrology, infectious disease, hematology, and endocrinology). Fourth year.

IDIS 5610. Perioperative Medicine: A Continuum of Care. This fourweek course is designed to emphasize perioperative medicine as a continuum of care with application of both basic science and clinical knowledge from a variety of rotation experiences. Basic science topics (ischemia and ischemia-reperfusion injury, infection, inflammation, and coagulation) will be applied to specific disease processes, clinical decision-making, and perioperative outcomes. An emphasis is also placed upon the importance of coordination and collaboration of care with various medical specialists and health care team members to achieve optimal patient outcomes. Students will participate in the perioperative care of adult patients undergoing elective and emergent surgical procedures from the preoperative evaluation through the duration of hospital stay. The pathophysiology and clinical implications of both acute and chronic disease processes will be consider ered with a special emphasis on coronary artery disease, obesity, COPD, diabetes, peripheral vascular disease, and acute kidney injury. This unique opportunity will allow the student to participate in the entire continuum of perioperative care and interact with numerous medical/surgical specialties and other health care disciplines. To facilitate integration of comprehensive knowledge and skills acquired from prior medical school experiences, patient selection will be based upon complexity of both the medical history and surgical disease process as well as the anticipated intensity of care. Clinical venues include operating room, PACU, ICU, wards, blood bank, radiology, and general surgery clinic. Clinical and didactic course instructors represent the following specialties: anesthesiology and critical care, surgery, pathology, radiology, internal medicine and medicine subspecialties (cardiology, pulmonary, nephrology, infectious disease, hematology, and endocrinology). Additionally, formal review of anatomy in the cadaver lab is provided. Excellent "intern prep course" for those interested in anesthesiology or surgery. Fourth year.

IDIS 5611. Immersion: Cardiovascular Intensive Care. In this fourthyear immersion course, students will become proficient in topics commonly encountered in the cardiovascular intensive care unit (CVICU), such as vascular access, advanced cardiac life support, cardiogenic shock, acute heart failure, and acute coronary syndromes. This course will use a multidisciplinary, case-based approach to learning. The predominant method of learning will occur at the bedside; the student will be fully integrated into the patient care team and will be given specific clinical responsibilities for patients. Recognizing that a specific case-based approach enhances learning, students will be assigned patients with different important cardiovascular conditions. For each assigned patient, the student and faculty member will complete a comprehensive Case Learning Plan which includes: (1) a focused review of the basic and/or translational science underlying a specific pathophysiological area of the case; (2) reading and brief presentation of pertinent clinical trials regarding the clinical management; (3) demonstration of relevant elements of the history and physical examination; (4) discussion of the differential diagnosis and diagnostic evaluation; (5) discussion of treatment options; and (6) discussion of the impact of the patient's acute disease on their long-term prognosis, functional capacity, and socio-economic status. Using the Case Learning Plans, the student will work with the CVICU team to document the demonstration of specific competencies. In addition to time spent in the CVICU with the assigned patients, students will observe and follow their patients

through diagnostic testing and therapeutic procedures in the cardiac catheterization lab, cardiac surgical operating room, electrophysiology lab, and noninvasive cardiovascular lab. Students will interact with other care providers in these settings to facilitate detailed learning of these aspects of care. In addition, further enhancement of learning will take place in the simulation lab in the Center for Experiential Learning. Fourth year.

IDIS 5612. Immersion: Kidney Transplantation Medical and Surgical Aspects. This course is intended to provide the fourth year student with an overview of the multidisciplinary approach to kidney transplantation. The student will be exposed to a variety of topics in transplant allowing for the integration of basic science methodology into clinical practice. The student will gain a basic understanding of transplant immunology and how it relates to histocompatibility testing and immunosuppresion management. The student will be exposed to both the medical and surgical aspects of kidney transplantation through the care of patients in the operative, inpatient and outpatient settings. In addition, the student will gain an understanding of the medical and ethical issues surrounding kidney donation, both in the deceased and living donor populations. The student will achieve the above mentioned objectives through a variety of learning pathways including directed reading, small group discussions, laboratory participation and hands on clinical experiences. Fourth year.

IDIS 5613. Immersion: Critical Illness: Catalyst for Integration and Application of Physiology and Pharmacology. 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. Successful management of such critically ill or injured patients requires a thorough understanding of physiology and pharmacology. By combining targeted teaching with hands-on experiences in different ICUs across the Medical Center, the Critical Illness Immersion Course will help deepen understanding of the physiology and pharmacology principles inherent in critically ill patients. Students will have the opportunity to spend one week in four different ICUs across the Medical Center, including the Medical ICU, the Surgical ICU, the Burn ICU, the Neurologic ICU, the Cardiovascular ICU and the Pediatric ICU. Students from the different ICUs will gather together in the afternoon for educational sessions to discuss physiology and pharmacology, as well as weekly for wet lab experiences where they will be able to obtain ICU-specific technical skills, such as airway management, ventilator manipulation, chest tube placement, and bronchoscopy. Fourth year.

IDIS 5614. Immersion: Community Health Care: Patients, Populations, and Systems of Care. The primary goals of this community health care elective are to equip students to effectively address predictors of poor health on an individual level, and to engage health care systems in ways that promote meaningful change. The three components of the course are 1) clinical experience seeing adult and pediatric patients in a primary care community health clinic, 2) didactic curriculum with area experts covering social determinants of health, systems of care, and means of intersection, 3) and an individual project. This course will satisfy the Primary Care requirement. Fourth year.

IDIS 5615. Immersion: Integrating Information Technology and Clinical Care. Biomedical Informatics is the clinical specialty concerned with how health care providers interact with patient data, general medical knowledge and research evidence through all aspects of care delivery. Lessons from the field of biomedical informatics help health care providers manage the complexities of genomically personalized medicine, population-based chronic care and team-based approaches to care delivery that include the patient. In this course, students will face complex clinical problems that illustrate the real-world applicability of biomedical informatics. To this end, students will participate in activities that leverage key tenets of biomedical informatics. Activities will include multidisciplinary clinical rounds, directed topic-based conversations, small group problem-solving and design work, directed study and review of the relevant biomedical literature, and critical assessment of proposed solutions. Fourth year.

**IDIS 5616. Clerkship in Sexual Health.** Sexual Health is an interdisciplinary course focusing on sexual health in the general population and the specific health care needs of sexual and gender minorities. Clinical specialties highlighted in the course include pediatrics and adolescent medicine, OB/GYN, psychiatry, and internal medicine with content threads from ethics, medicolegal health care, human development, and chronic care. The

course content will be divided into three blocks: (1) Human Sexuality, (2) Sexual and Gender Minorities, and (3) Reproductive Health for Men and Women. Each block will end with a concluding session that summarizes the specific skills and knowledge students need to be successful during their residency training (e.g., reproductive health needs for students going into emergency medicine vs. general surgery). Fourth year.

IDIS 5616. Immersion: Sex, Sexuality, and Sexual Health. Sex, Sexuality, and Sexual Health is an interdisciplinary course focusing on sexual health in the general population and the specific health care needs of sexual and gender minorities. Clinical specialties highlighted in the course include pediatrics and adolescent medicine, OB/GYN, psychiatry, and internal medicine with content threads from ethics, medicolegal health care, human development and chronic care. The course content will be divided into three blocks: (1) Human Sexuality, (2) Sexual and Gender Minorities, and (3) Reproductive Health for Men and Women. Each block will end with a concluding session that summarizes the specific skills and knowledge students need to be successful during their residency training (e.g., reproductive health needs for students going into emergency medicine vs. general surgery). Fourth year.

IDIS 5617. Immersion: Health Policy, Social Activism, and Surgery: Development of Community-Based Leadership in Surgery. The Vanderbilt Orthopaedic Institute Center for Health Policy seeks to offer a course that exposes fourth-year medical students to the traditional treatment of orthopaedic trauma, general surgery trauma, and neurosurgical patients in the emergency department, operating room, and clinic, together with a seminar series that will allow the medical student to consider the social context of disease and injury and ultimately propose potential policy solutions to specific injuries that are commonly seen. Students will rotate in clinic/OR on a weekly basis with course instructors and will also meet weekly with the instructors for a seminar-style discussion related to the social context of illness and injury. The final project of the course will involve each student developing a specific policy-driven proposal to impact the injury of interest. The ultimate goal of the month will be to further build the skills necessary to develop future surgeons who will not only treat disease but also understand the deeper societal and policy context and implications. Fourth year.

IDIS 5618. Immersion: Primary Care in Resource-Limited Settings. Health promotion, disease prevention and control, and mortality reduction require an inter-professional, multidisciplinary response for multidimensional problems. Whether from the point of view of humanitarian interest, research competitiveness, full utilization of our educational resources, or the need for global expertise for modern America, the global health agenda has emerged as an increasingly important component of higher education in the U.S. Responding to this growing need in U.S. academia, the Vanderbilt University Institute for Global Health and the Lwala Community Alliance (LCA, Iwalacommunityalliance.org) have developed a proposal for an immersion course for fourth-year medical students. The introductory overview course titled "Delivering Primary Care in Resource-Limited Settings" is a clinical rotation that also introduces students to key topics and concepts in global health including diseases, conditions, and health interventions common in low-resource settings. Health and developmental issues across nations and cultures that require collective (partnershipbased) action will be highlighted. The course will be taught in Lwala, Kenya, at the Lwala Community Hospital and through online modules and Skype mentoring sessions. Approval required. Fourth year.

IDIS 5619. Immersion: Congenital Malformations and Their Management in Pediatric Populations. This course is designed for fourth year medical students who will have a career in which they will provide care to children with congenital malformations that require complex treatment plans. During the four-week course, students will increase their understanding of common congenital disorders and begin to develop the skills necessary for managing these complex disorders within interprofessional teams. Multiple learning strategies will be used, including didactic presentations, rotations in a variety of clinical settings, case discussions, and a relatively innovative strategy called the challenge cycle. The challenge cycle is an approach to discovery learning where groups of students will be asked to address a real life challenge and propose solutions based on their investigation of the evidence related to the challenge. Teams of students will be given a challenge

to address each week. Primary course content will be focused around common genitourinary problems, congenital heart malformations, craniofacial abnormalities, brain malformations, and neurodevelopmental disabilities. To aid in completing these assignments, the fundamentals of residency-relevant prenatal development and the latest evidence on molecular causality will be supplied in 2–3 didactic sessions per week. In addition, there will be six half days of experiential learning within various clinical settings (clinics, surgical repair, diagnostic radiology). Some learning of less common congenital malformations will be presented in a clinical case-based format. At the end of each week, teams will present their challenge cycle assignments to the faculty and other students in the course. Fourth year.

IDIS 5620. Immersion: Clinical and Molecular-based Approaches to the Diagnosis and Treatment of Cancer. The overall goals of this course are to provide participants with an understanding of the molecular mechanisms of cancer development and progression and the multidisciplinary approaches to cancer diagnosis and treatment in the clinic. Furthermore, how those molecular changes are detected and leveraged in the clinical setting for patient care will be elucidated. Formulating patient therapeutic strategies is complex and requires an interdisciplinary team effort between medical, surgical, and radiation oncologists. In addition, contributions from pathologists, physical therapists, nutrition counselors, and psychologists are invaluable for personalized cancer diagnosis and treatment. This course will provide exposure to these specialties in the context of breast and lung cancer and melanoma; however, the course will also provide opportunities to explore other tumor types. In addition, the advantages and barriers of clinical trials, socioeconomic disparities, and ethical dilemmas will be presented. This course will employ a combination of seminars, literature review sessions, and clinical and laboratory experiences. Fourth year.

**IDIS 5621. Immersion: Cardiovascular Diseases.** The course will expose the student to a broad range of cardiovascular diseases, focusing on basic science and clinical topics that are applicable to all three specialties: cardiology, cardiothoracic surgery and vascular surgery. All students will participate in a core series of lectures and workshops, but will be allowed to choose one of the three specialties for their patient care experience. Clinical care will occur in a variety of settings including the wards, intensive care unit, operating room, outpatient clinics, and diagnostic laboratories. Although each student will need to choose an area of clinical interest for their patient care experience, the course provides flexibility to allow the interested student to cross over to the other two specialties in order to follow through on a specific patient's care or to learn more about diagnostic testing or therapies specific to that specialty. Fourth year.

**IDIS 5633. Learning Communities Immersion.** The Learning Communities IM 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 IM course provides the environment for students to focus on further honing their own skill sets regarding ethics, meta-cognition, leadership, and health care policy prior to graduation and the beginning of residency training.

**IDIS 5930.** Preparation for Internship. This course will provide fourth-year 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 uses a variety of methods, including lecture, small group and panel discussion, as well as skills labs and simulation. Fourth year.

**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—Pre-Clinical. Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required. First- and second-year elective.

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 7100. Special Clinical Study—Non-VU.** 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.

#### 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. Foundational 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 5246.** Leadership Development in Global Health. This course is an introduction to leadership theory and practice, directed toward those who seek leadership positions in the area of global health. The course will draw on students' own experiences with leadership and seek to extend their capacities to effectively lead in organizations. The course seeks to explore dimensions and competencies of leaders, define the abilities and traits of effective leadership and explore how students develop those requisite abilities. This course may be taken as credit toward the Global Health Certificate. First and second year. Fall.

**IGHM 5248. Medical Anthropology.** This course provides a framework for students to investigate and learn about the study of pain, illness, suffering, and healing in cultures around the world. This course is designed to introduce students to a broad range of medical anthropology topics, theoretical approaches and research techniques by examining case studies on chronic illness, sorcery and traditional healing, modern pandemics, as well as treatment and illness expectations. Within these discussions, our focus will be comparative, investigating illness, misfortune, and healing in a number of societies from Mozambique, Uganda, South Africa, France, the United States, and Japan. Students will develop an appreciation for the culturally specific nature of illness, allowing them to better understand and treat patients from diverse cultural backgrounds. This course may be taken as credit toward the Global Health Certificate. First and second year. Fall.

**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 5252.** Quality Improvement in Global Health. This course will introduce the concept and methodology of Quality Improvement (QI) science as it applies to health care delivery in the U.S. and in the developing world. The course is designed to give students the background to understand the role that QI plays in reducing medical errors, improving service efficiency and adding value in health care systems. Students will be given hands-on experience in QI by developing and implementing a personal improvement project over the course of the month. Students will develop an understanding of how to bring about change in health care systems by analysis of health care processes, how to develop pilot interventions, use data to evaluate changes, and empower individuals to be agents of improvement. This course may be taken to satisfy requirements for the Global Health Certificate. Spring.

**IGHM 5254.** One Health: Intersection of Animal, Environmental, and Human Health. The course objectives are to introduce students to the core concepts of One Health and to expose them to integrated transdisciplinary approaches to global health problems. The online course will use lectures and case studies to illustrate how human, animal, and environmental health are linked and students will participate in activities to design creative, interdisciplinary interventions for a global health problem. Spring.

**IGHM 5255. Global Health Nicaragua.** This twelve-week course is designed to expose medical students to the basic health care systems of Nicaragua centered around a one-week trip to the country. Students will gain a basic understanding of the health care disparities between Nicaragua and Nashville; understand the role of a visiting health care provider in global health stewardship; understand the role of DM, HTN, and nutrition among the Nicaraguan people. Students will work to educate Nicaraguan patients in diabetes, nutrition and cardiovascular health, and will educate

the Vanderbilt community through a poster session upon their return. The class will be composed of didactic and small group case-based learning, several small group project designs, journal club, and clinic observation, culminating in a poster session. Pre- or corequisite: Basic knowledge of Spanish or the Medical Spanish elective. First and second year.

**IGHM 5258. Global Health Argentina.** This course is offered by the Vanderbilt Vaccine Center and Infant Foundation as an international field experience involving clinical and research training in Argentina, providing thorough insight into Argentina's unique health care system. The course will provide students with the opportunity to conduct biomedical translational research or pediatric rotations at hospitals and medical centers in Buenos Aires. Students will be embedded into a fully bilingual team of both local and U.S.-trained researchers and physicians, and students will also have the opportunity to shadow certified physicians in pediatric hospitals or primary health care model centers. While the focus is completely scientific, students will be exposed to the multicultural aspects of Buenos Aires to learn the local culture and Spanish language. This course is graded pass/fail. First year.

**IGHM 7100.** Clerkship in Global Health. This four-week elective aims to provide clinical experience in the care of patients in low or middle-income countries, most often in resource constrained environments. Students will 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 will learn how treatment and treatment decisions are influenced by local cultural norms and policies, and will understand the variety of barriers to successful therapeutic regimens. Students will also reflect on the various cultural gaps encountered and how these can be bridged and the concept of cultural humility. Countries and sites may vary, but approval will depend on the safety of the area. Approval will be facilitated by Vanderbilt faculty involvement at the site. If the intended location is on the State Department Travel Alert List, additional approval will be required. Fourth year.

#### Medical Education and Administration

MADM 5700. Shade Tree Clinic Full-Year Elective. Enrolled students will commit to volunteering for a minimum of 20 clinic sessions, Tuesday or Saturday, during the months of July through April. Students will also be responsible for assisting with leading educational initiatives while in clinic such as teaching first- and second-year students during clinic and facilitating clinic wrap up. The course will additionally consist of 6–8 lecture sessions spread throughout the year involving topics such as community health resources, health care economics, quality improvement, and preventive care. All students will be required to complete a one-page assignment individually or as a group to reflect on the experience. Students will complete a project to be decided upon by the group. This could take the form of a quality improvement initiative, paper for publication, or any number of ideas depending upon the interest of the group. Fourth year.

MADM 5750. Students-As-Teachers Full-Year Elective. The goal of this course is to prepare senior medical students to become effective teachers as residents. The course offers a longitudinal didactic program, bringing the cohort together throughout the fourth 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. Fourth year.

**MADM 6150. Special Research Study—Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**MADM 6200. Special Study—Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**MADM 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.

#### 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. Uses 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. Third-year medical students participate in an eleven-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. The clerkship is divided into three rotations of which two are general medicine and one subspecialty medicine. 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 all clinical and teaching activities of the service, including daily attending rounds, morning report, noon conferences, Grand Rounds, and the Thursday morning lecture series. In addition, students meet weekly in small groups with an assigned faculty member who conducts preceptor rounds for the entire eleven weeks. Third year.

**MED 5130.** Subspecialty Clinics in Medicine. The Department of Medicine offers a four-week unit for senior medical students to work in subspecialty clinics in the department. Students work one-on-one with faculty members or fellows in at least nine (9) clinic meetings per week. Students may choose from a variety of clinics including allergy/pulmonary, bone marrow transplant, cardiology, endocrinology, gastroenterology, hematology/oncology, infectious disease, nephrology, pharmacology, and rheumatology. Students may spend all of their time on one or two clinics or elect to work in a variety of clinics. Students arrange their schedules with attendings in various clinics and contact Dr. Spickard to discuss their plan for the month. Fourth year. Prerequisite: Medicine 5020.

MED 5210. Clinical Pathophysiology and Pharmacology: Rounds on the CRC. The course consists of the in-depth discussion each week of the illness of one patient emphasizing the pathophysiology of the disease process and important issues in clinical diagnosis. Enrollment is limited so that the traditional question and answer interaction between physicians and students during rounds can be maintained. Patients will normally be selected from among those admitted to the Clinical Research Center and will, insofar as possible, reflect conceptually important or commonly encountered diseases and differential diagnostic problems. Prerequisite: First year curriculum. Second year.

MED 5240. Ethics, Law, and Medicine. This course explores a variety of topics and problems at the intersection of ethical, legal, and medical

concerns in the modern world of health care, including (to name a few) end of life decision making, reproductive technologies and abortion, genetic screening, and organ transplantation. Case-based and discussion oriented, the course has a secondary aim—to engage with others from different disciplinary backgrounds and training in order to foster greater appreciation for the multiplicity of perspectives associated with these (and similar) topics. Accordingly, the course is designed for, and available for enrollment to, students in the schools of Divinity, Law, and Medicine. First and second year.

MED 5248. HIV Counseling and Testing Elective. HIV rapid screening initiatives targeting urgent care, public health and emergency department clinics are components of a broad based HIV testing initiative to identify an estimated 1.2 million HIV infected persons unaware of their infection. Community provider Nashville CARES certifies students to perform HIV counseling and testing services within local emergency rooms (Vanderbilt, Metro General, Baptist Hospital), neighborhood health clinics, and community venues serving high risk targeted populations through outreach and other health initiatives. Training includes CDC Counseling and Testing Training, Counseling Skills for HIV Positive Clients, Nashville CARES HIV CTS Policy and Procedure, Nashville CARES Confidentiality Law, and Orasure and OraQuick Testing and Screening Device Training. Students will provide public health screening and targeted CTS. First and second year.

MED 5250. Master Clinician Elective at Shade Tree: Learning in the Community. The Master Clinician Elective at Shade Tree (MCE): Learning in the Community aims to provide VMS II students with a community-based, primary care-focused, clinical experience during their spring semester. The goal of the course is to help students accelerate their clinical competency while pursuing interests in community health and primary care. Students will volunteer as underclass clinicians for a minimum of six (6) clinical shifts during the semester. Under the supervision of a clinical medical student, MCE students will be responsible for conducting the history, physical examination, and formulating an assessment and plan. MCE students will be encouraged to present patients to attending providers and document the encounter using StarPanel. In addition to these clinical learning opportunities, the MCE students will attend four lunchtime didactic sessions during the spring semester. Second-year students only. Spring.

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 Event. 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 Basics. 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 5316. Introduction to the Hospital/Medical Consultation. Students will participate in a multifaceted elective providing an overview of the scope of medical care within the hospital, as well as a more direct experience with general inpatient medicine. Students will join the medical consultation team, composed of an attending +/- senior resident. This team assists nonmedical services, such as orthopedics, urology, neurology, etc., with the medical management of their patients. The spectrum ranges from general co-management of complicated medical patients in the perioperative setting to the management of specific medical questions, such acute hypertension, AKI, hyponatremia, or infections. The team is also often consulted for pre-operative medical assessment and risk stratification. Students will have the opportunity to increase their knowledge of general medicine through evaluating patients, writing consultation and follow-up notes, and presenting patients during rounds. The students will also have a unique opportunity to learn about the team approach to medicine through half-day experiences with physical therapy, pharmacy, and case management/social work. Additionally, the clinical experience will be augmented by key readings, lectures, and small group sessions/CELA experiences, during which the students will gain experience in managing general inpatient management of the medical patient through small groups/simulation. At the conclusion of this two-week elective, students will understand the role of inpatient medical consultation; analyze common consultation questions and develop appropriate recommendations to provide to the primary team; apply knowledge of evidencebased, cost-effective, pre-operative risk assessment techniques; gain experience in managing the hospitalized medical patient through small group/ simulation; and understand the team approach to inpatient care through targeted experiences with ancillary services.

MED 5318. Introduction to Dermatology. This elective course will provide a broad and comprehensive overview of dermatology in the academic setting, including general, surgical, inpatient, and cosmetic dermatology, as well as dermatopathology and dermatologic research. This will be achieved through attendance of the aforementioned dermatology clinics, and inpatient consults, as well as six hours of lectures and grand rounds. Students will also receive one afternoon of instruction in basic and clinical academic dermatologic research. At the conclusion of the elective, students will understand the basic language of dermatology and the integral role that skin plays in both superficial and systemic disease; will understand the presentation of common skin cancers as well as treatment; and will understand the fundamentals of clinical and basic science research in academic medicine. Through brief hands-on experience in the lab and through the small clinical research project, students will gain exposure to the building blocks of academic research.

**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 R.N.'s, 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 patientcentered 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 clinical and outpatient 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 smoking cessation, behavioral health, nutrition, exercise science, or corporate health. An overview of each area not chosen will be provided. Students are expected to spend approximately half of their time in research related to the measurement of clinical outcomes within the rehabilitation program. The format of the elective will include lectures, case discussions, readings, and direct patient contact. A mentor, through a multidisciplinary approach, will guide the student to health promotion. To personalize the experience, students will receive their own fitness assessments, nutritional counseling, stress assessments, and free use of the Dayani Center facilities during the elective. Opportunities to spend time in the Cardiology Clinic or Integrative Health may be available. In addition, students will be trained in EKG interpretation by co-supervising 12-lead exercise tests with Dayani staff. At the conclusion of the elective, students will know the fundamental principles of health promotion, understand lifestyle management of common cardiovascular diseases, and begin to understand EKG interpretation.

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 two-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 elective will offer students an introduction to the unique problems of hematology, including anemia, bleeding, thrombosis, transfusions, and hematologic neoplasms, including lymphoma, leukemia, and myeloma. Didactics will include lectures and a series of articles provided for the rotation. The emphasis will be on diagnosis and management of patients with hematologic cancers. Students will spend time in Hematopathology, Blood Bank, and clinics, ranging from benign to malignant hematology and transplant. They will also rotate on a malignant hematology inpatient service and the transplant service. Students will be given patient consult cases to guide their learning, and they will be asked to present a written case history and a plan of care, emphasizing hematologic issues, including transfusion needs, antibiotic prophylaxis if needed, therapeutic options, and prognosis. As part of the therapy, other areas to be addressed will be symptom management, side effects of therapy, survivorship, and end of life care and the roll of palliation and hospice. At the conclusion of the two-week elective, students will understand some of the questions to be asked, answers to those questions, what is involved in devising a plan of treatment, and communicating with the patient, recommending a plan of therapy. Students will learn how to discuss not only a therapeutic plan, but also a prognosis.

MED 5334. Intensive Medical Spanish and Culture Immersion. In this two-week elective, students will join a Spanish language medical interpreter team's observational program at either VUMC or another approved community clinic for 28 hours per week, shadowing the professional interpreters in a broad range of clinical services. In addition, this rotation (which includes evening call), will be combined with 12 hours of advanced grammar and medical vocabulary review through classroom work with the course director and supervised, guided self-study through on-line, multimedia medical Spanish programs. Communicative based classroom work will involve patient case presentations (emphasizing language, culture, and medicine), simulated role play of the patient/provider relationship, and readings, films, and discussions of culture, demography, and health care issues with respect to the Latino patient in the U.S. At the conclusion of the two-week elective rotation, students will be able to interview patients in Spanish in a culturally proper manner, take a medical history, conduct a physical examination, give prescription and follow-up instructions, and intervene with medical emergencies with a heightened degree of cultural sensitivity and greater awareness of Latino culture in the context of the Spanish-speaking patient. The students will also gain a greater understanding of the role of the medical interpreter in the patient/ provider dynamic and how to correctly and effectively work with a medical interpreter, an essential skill of the health care provider working with today's linguistically diverse patient population. Open to M.D. students only. Prerequisite: Spanish language at an intermediate level.

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 percent 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 5350. History of Medicine.** This course covers medical history from the Ancient Near East to the present. The course directors give the first few lectures for background; subsequent class meetings consist of guest lectures and reports by the students. Each student writes a paper or book review on a chosen aspect of medical history. The students who complete this course will be on their way to becoming humanistic

physicians who understand where their profession has been and where it may be going. First and second year.

**MED 5430.** Rheumatology Clinical Outcomes Research. The research will focus on analysis of patients seen at Vanderbilt with a particular rheumatic disease (e.g., ankylosing spondylitis, polymyalgia rheumatica), chosen with the student, to recognize variables which predict good or poor outcomes in specific patients. The research program will involve extensive review of patient records and entry of data into the Vanderbilt Rheumatology data base. Student participation in data analysis is encouraged. First and second year.

**MED 5555. 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. Prerequisite: Medicine 5020. Fourth year.

MED 5610. Clerkship in Clinical Nephrology. Students will participate in daily rounds with the nephrology attending, the nephrology fellow, and the medical resident assigned to the Vanderbilt Hospital nephrology service. Patients with various clinical disorders including fluid and electrolyte abnormalities, acid-base 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 and develop an understanding of renal emergencies. This elective is designed to give the fourth-year student significant experience in practical clinical nephrology and prepare him or her for future house staff training. Prerequisite: Medicine 5020. Fourth year.

**MED 5611.** Subinternship in Medicine—VU. A student may serve as a clerk on the Vanderbilt medical service otherwise staffed by attending physicians, one assistant resident, and one regular intern. Approximately three to four selected new patients per week will be assigned for initial evaluation and continuing care. The format provides an excellent opportunity to work closely with members of the clinical faculty in caring for patients with interesting diagnostic and management problems. The patients assigned will be selected for their teaching value, and the student will function as the sub-intern under the direct supervision of the assistant resident and attending physician. Rotations on inpatient cardiovascular, medical subspecialties, and general medicine are available. Prerequisite: Medicine 5020. Fourth year.

**MED 5613.** Subinternship in Critical Care Medicine—VU. This course is a four-week subinternship 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. Prerequisite: Medicine 5020. Fourth year.

**MED 5616.** Subinternship in Medicine—VAH. The form of this clerkship is a substitute internship on the Veterans Administration Hospital medical wards, working in concert with the house staff team (assistant resident, intern, and one or two third-year medical students). The substitute intern will be assigned one or, rarely, two new patients each admitting day and will be

responsible for their care under the direction of the assistant resident. The substitute 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. Prerequisite: Medicine 5020. Fourth year.

MED 5619. Subinternship in Critical Care Medicine - VAH. This subinternship at the Veterans Administration Hospital is intended to expose medical students to a variety of important 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 ICU/CCU as a sub-intern under the supervision of a medical resident, a pulmonary/ cardiology fellow, and both an intensive care unit 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 everythird-night in-house call schedule and will work directly with two residents and interns. 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 ICU and CCU pharmacology, airway management and mechanical ventilation, fluid/electrolytes management, nutritional intervention, and ICU ethics. Prerequisite: Medicine 5020, Surgery 5020. Fourth year.

**MED 5620.** Clerkship in Gastroenterology—VU. This clerkship offers a broad experience in all clinical phases of gastroenterology including diseases of the hepatobiliary system and pancreas. Seminars, rounds, and evaluation of current literature are regularly scheduled. Students will be actively involved in inpatient consultation and outpatient clinics. Exposure to gastrointestinal endoscopic techniques will be available. Prerequisite: Medicine 5020. Fourth year.

**MED 5621. Clerkship in Gastroenterology – VAH.** This clerkship at the Veterans Administration Hospital offers a broad experience in all clinical phases of gastroenterology including diseases of the hepatobiliary system and pancreas. Seminars, rounds, and evaluation of current literature are regularly scheduled. Individual instruction in sigmoidoscopy as well as exposure to other more specialized gastrointestinal techniques are available. Prerequisite: Medicine 5020. Fourth year.

**MED 5622.** Clerkship in Hepatology. This clerkship offers a broad experience in diagnosis and management of patients with liver disease. Students participate actively in liver service activities and attend all didactic teaching sessions within the Division of Gastroenterology. Exposure to outpatient consultative and continuing care is emphasized. In addition, students will make hospital rounds daily with the attending hepatologist. Prerequisite: Medicine 5020. Fourth year.

MED 5635. Clerkship in Bone Marrow Transplant. For one month the student will participate in the activities of the bone marrow transplant service, including Tuesday and Thursday clinics, Monday teaching conferences, daily morning work/teaching rounds with the medical house staff, and other teaching conferences with the house staff. This elective is designed to provide in-depth experience with respect to the selection of patients for transplant procedures as well as with the management of transplant problems. Prerequisite: Medicine 5020. Fourth year.

MED 5645. Clinical Nutrition and Metabolic Support. The Adult Nutrition Support Team, housed in the Vanderbilt Center for Human Nutrition, serves as a consultation service for patients who require parenteral and enteral nutrition at VUMC. Initial comprehensive consultation and followup care provide guidance in appropriate patient selection, determination of nutrient requirements and type of nutrition support, and ongoing clinical management to prevent complications and achieve nutritional goals. Typical patients include those who are critically ill with major abdominal surgery or trauma and those with serious underlying gastrointestinal disease. It is not unusual to see patients with life-threatening malnutrition. Students who choose this elective will participate as active members of the multidisciplinary consult team. The student will learn nutrition assessment methods and the skills to translate assessment findings into appropriate nutrition support interventions. Exposure will include intravenous and tube feeding interventions. Skills for typical prescription and monitoring of the nutrition support patient will be taught including macronutrient, fluid, electrolyte, acid-base, and glucose management. The student will have the opportunity to follow individual patients from initial consultation to daily follow-up care. There will be an opportunity to participate in the home malnutrition clinic as well. Prerequisite: Preclinical curriculum. Fourth year.

**MED 5650. Clerkship in Patient-Oriented Research.** The Clinical Research Center is a combined inpatient/outpatient facility drawing patients from all divisions of Vanderbilt Hospital. Many of the most important discoveries pertaining to patient care are made in such a setting. Most of the patients have complicated disease presentations. Students have the opportunity to experience both basic and translational research in a clinical setting. Regular attending rounds will be made with the house staff and investigators, and there will be an opportunity for the student to participate in the evaluation of patients and conduct patient-oriented research. Prerequisite: Medicine 5020, Surgery 5020, Pediatrics 5020. Fourth year.

MED 5660. Clerkship in Pulmonary Diseases—VAH. Students participate in an active inpatient pulmonary consult service (8–12 consults per week, 4–8 bronchoscopies per week) where they evaluate and present patients and review chest x-rays, chest CT scans, and pulmonary function tests on a daily basis. Clerks acquire skills in the work-up and management of common pulmonary problems including hypoxemia, pulmonary emboli, acid-base disturbances, CXR abnormalities, obstructive and restrictive lung diseases, infection, and neoplasm. Students also have the opportunity to be involved with outpatient evaluation and work-up of lung masses and participate in a weekly interdepartmental chest cancer conference. Other activities include weekly pulmonary clinic at the VA, weekly physiology/pathophysiology lectures, and weekly clinical case conference. Prerequisite: Medicine 5020. Fourth year.

**MED 5670.** Clerkship in Renal Pathophysiology – VAH. This clerkship offers active participation in the evaluation of patients with kidney disease and fluid-electrolyte imbalance, in acid-base disorders, and in renal-electrolyte rounds, as well as experience in the hemodialysis program for acute and chronic renal failure. Plasmapheresis patients will also be seen as a part of the rotation. Students will see consults and also manage nephrology inpatients. Prerequisite: Medicine 5020. Fourth year.

**MED 5680.** Clerkship in Infectious Diseases. During the clerkship, the students will evaluate patients with infections as part of the infectious diseases consult service at VU Hospital. They should gain competence in diagnostic skills and in the management of infected patients, including choice and use of antibiotics. Special emphasis will be placed on understanding the epidemiology, pathophysiology, and natural history of infectious diseases. Students will be active participants in the management and follow-up of patients and will attend regularly scheduled rounds, conferences, and seminars of the Infectious Diseases Division. Prerequisite: Medicine 5020. Fourth year.

MED 5691. Subinternship in Cardiovascular Critical Care—VU. The student will actively participate in the management of critically ill cardiology 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 an admission history and physical examination 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. Prerequisite: Third year core clerkships. Fourth year.

MED 5710. Clerkship in Rheumatology Center. 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. Emphasis is placed on learning 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. Prerequisite: Preclinical curriculum. Fourth year.

MED 5730. Clerkship in Clinical Cardiology. This consultative cardiology experience was restructured in 2005 to offer new learning opportunities for medical students wishing to refine their skills in cardiovascular diagnosis. It provides both inpatient encounters and personalized instruction in physical diagnosis and EKG reading. The student will see new patients in consultation with cardiology faculty at Vanderbilt and at the VA Hospital. A highlight of the experience is a private weekly patient presentation to--and examination of the patient with--a senior cardiac physician at Vanderbilt. The student will be instructed in the use of a heart sound simulator which has been demonstrated to improve physical diagnosis skills. Eight didactic sessions on EKG interpretation are provided during the four-week rotation. Finally, weekly conferences to attend include: Clinical Cardiology (2), Echocardiography, Nuclear Medicine, and Cardiology Grand Rounds. Prerequisite: Medicine 5020. Fourth year.

MED 5735. Palliative Care. Students will rotate through VUMC, the VA Hospital, and Alive Hospice 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. Students will spend roughly three weeks at VUMC and the remainder of time equally at the VA Hospital and Alive Hospice. 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. In addition at VUMC, students will have the opportunity to rotate on the inpatient palliative care unit. At Alive Hospice, they will accompany members of the IDT on home visits and learn more about their various roles in end of life care. In addition, students will spend time on the inpatient hospice units. 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. Prerequisite: Preclinical curriculum. Fourth year.

**MED 5737. Palliative Care: Hospice.** This semester-long elective for first- and second-year students provides the opportunity to spend time at Alive Hospice, under the direction of the medical director, rounding in their inpatient hospice residence (a free standing, independent, thirty-bed hospice facility). Students will be exposed to a variety of patients (age, cancer and non-cancer diagnoses, AIDS, differing symptom management challenges, etc.), and will have the opportunity to interact with patients, families, and interdisciplinary staff. It is intended to expose the student to this specific paradigm of care at the end of life, enhancing awareness of the reality of the dying process, the importance of hospice philosophy, and the integration of an interdisciplinary team concept, and to provide a "take home" symptom management protocol. Students will develop a deeper skill in communication and benefit from the continuity of understanding end of life issues and symptom management. First and second year.

**MED 5740.** Clerkship in Pulmonary Consultation. 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 pleural biopsy procedures, and attending joint pulmonary conferences. Prerequisite: Medicine 5020. Fourth year.

**MED 5760.** Clerkship in Rheumatology. Time will be spent primarily in Rheumatology clinic at The Vanderbilt Clinic and the VA Hospital. 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 in rheumatology. Students will have an opportunity

to attend all rheumatology conferences, in both clinical and research meetings. Prerequisite: Preclinical curriculum. Fourth year.

**MED 5770. Clerkship in Clinical Endocrinology.** This elective is designed to afford students an intensive experience with both inpatients and ambulatory patients. The student will be a member of the inpatient endocrine consultation team, which consists of an endocrinology staff physician, a fellow, and residents. Students will work up assigned patients, discuss them with other members of the team, and follow them throughout hospitalization. The focus will be on diagnostic and therapeutic decision making for hospitalized patients. In addition, the student will attend a variety of endocrine and diabetes clinics, including clinics with special emphasis on pituitary disorders, thyroid-parathyroid disease, and ambulatory diabetes management. Prerequisite: Medicine 5020. Fourth year.

**MED 5780.** Subinternship in Medical Oncology. This subinternship will provide the student with a broad overview of clinical oncology. Inpatient exposure will be centered at Vanderbilt Hospital, where the student will assist the oncology fellow 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 will attend two to three outpatient clinics per week and see patients with the oncology attendings. During the rotation, the student will also attend the Division of Oncology conferences at Vanderbilt. Prerequisite: Medicine 5020. Fourth year.

MED 5785. Subinternship in Hematology-Oncology. The student will function alongside interns the primary caretaker for up to five patients on the malignant hematology service. S/he will perform histories and physicals and formulate plans for those patients with the advice and assistance of other members of the team. The patients are usually complex with problems in multiple organ systems. The student will become familiar with the common hematologic malignancies and their management, in particular AML, ALL, aggressive lymphoma, and myeloma. Management issues including pain control, management of mucositis, and empiric coverage of neutropenic fever will be emphasized. Clinical trial design and execution will be discussed.

MED 5790. Clerkship: Clinical Dermatology. This elective will be centered on teaching in the outpatient setting with direct faculty interaction. The location of clinic assignments will be in the VU Dermatology Clinic at Vanderbilt One Hundred Oaks, the Nashville VA Hospital, and the VU pediatric dermatology clinic in the Vanderbilt Doctors' Office Tower. 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. Rotations in July require special permission. Fourth year.

**MED 5820.** Spirituality in Medicine. Weekly one-hour meetings with journal club format. Articles will represent diverse faiths and points of view. Goals will be to develop broad-based, universal definition of spirituality and to explore the impact of spirituality in health, disease, and treatment. Also will discuss death, dying, and diversity issues. First and second year.

**MED 5825.** Clerkship in Medical Ethics. This course offers an opportunity to create an individualized learning experience in medical ethics. Activities during the four-week elective may include directed readings, research, and participation in ethics consultations, as well as attendance at relevant lectures and case conferences. A final project will be required for presentation to the members of the Center for Biomedical Ethics and Society. Approval required. An individualized learning plan must be submitted at least one month prior to the start of the month's rotation. Available September, November, January, February, and April. Fourth year.

**MED 5910. Preceptorship at Siloam Family Health Center.** The objective of this elective is to expose second-year medical students to clinical health care at a community clinic. Students will visit the Siloam Family Health Center once a week during its hours of operation (Monday, 6:00–8:00 p.m., Thursday, 6:00–8:00 p.m., or Saturday, 10:00 a.m.–noon). During their visits, students will shadow a physician. They may also have the opportunity to help in history taking and physical diagnosis. Second year. Prerequisite: Completion of first-year curriculum.

MED 5930. Clerkship in Health Promotion. Monthly elective for one student interested in health education and health promotion in clinical and outpatient programs. The student will observe and participate in the Cardiac and Pulmonary Rehabilitation Programs at the Dayani Center. Additionally, the student may elect to spend a portion of this elective in the areas of smoking cessation, behavioral health, nutrition, exercise science, or corporate health. An overview of each area not chosen will be provided. Students are expected to spend approximately half of their time in research related to the measurement of clinical outcomes within the rehabilitation program. The format of the clerkship will include lectures, case discussions, readings, and direct patient contact. A mentor, through a multidisciplinary approach, will guide the student to health promotion. To personalize the experience, students will receive their own fitness assessments, nutritional counseling, stress assessments, and free use of the Dayani Center facilities during the clerkship month. Students will be involved in a one-day a week clinic at Vanderbilt Heart and Vascular Institute under the direction of a physician. In addition, students will be trained weekly in EKG interpretation by co-supervising 12-lead exercise tests with Dayani staff. It is advised that students contact the course instructor prior to clerkship. Prerequisite: Preclinical curriculum. Fourth year. Not offered in December.

**MED 5940.** Rheumatology Clinical Research. Students will be given a topic within a long-term data base of patients with rheumatic disease for intensive investigation during a one-month period. The student will be expected to acquire skills in outcome research. The possibility of participating in this elective for two months may be considered. Requires a Special Study Research Petition. Fourth year.

**MED 5960.** Clerkship in Clinical Hematology. For one month, the student will participate in the daily clinics of the hematology service. Additionally there is an opportunity to attend the rounds of the malignant hematology service and/or the benign hematology service at Vanderbilt University Hospital. The student will be able to attend clinical conferences. This clinical elective is designed to provide a broad in-depth exposure to both benign and malignant hematology under the direct supervision of the hematology faculty. Prerequisite: Medicine 5020. Fourth year.

MED 5970. Fundamentals of Quality Improvement Full-Year Elective. The Fundamentals of Quality Improvement (QI) in Health care full-year elective provides senior students with an opportunity to gain foundational knowledge of QI and patient safety principles in health care. Students will participate in an elective course offered to students from the schools of Medicine, Management, Nursing, and Education that runs weekly from January through April. The course will challenge students to think in an interdisciplinary manner about models and team-building strategies for leading QI initiatives in a variety of organizational settings. Students will form interdisciplinary teams to complete a final group project. Students will also complete the IHI Open School online certificate. Fourth year.

**MED 6100. Special Clinical Study – Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

**MED 6150. Special Research Study—Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**MED 6200.** Special Study—Pre-Clinical. Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**MED 7100. Special Clinical Study—Non-VU.** 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—Non-VU.** Each student arranges an independent study with a mentor and completes a period of research work away from Vanderbilt. Approval required.

# Microbiology and Immunology

**MICR 5020. Microbiology and Immunology.** This course provides a comprehensive course of microbiology and immunology encompassing the molecular cell biology of microbial agents and the immune system,

review of pathogenic bacteria, viruses, fungi, protozoa, and parasites. The course consists of lectures, conferences, and laboratory sessions and problem-based small group discussions focused on different pathogenhost relationships. Required first year.

**MICR 6150. Special Research Study-Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**MICR 6200. Special Study-Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

### Neurology

**NEUR 5020. Neurology Core Clerkship.** The rotating students of the third-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. Third year

NEUR 5310. Neurosciences in Clinical Care. 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.

NEUR 5315. Movement Disorders and Deep Brain Stimulation. The overall goal of this elective is to immerse students in the evaluation and treatment of patients with movement disorders. 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. 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. Additional time will be spent working closely with Nuerosurgery in planning surgeries. Students may also attend the multidisciplinary DBS conference which occurs once a month. 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 5611. Neurology Consultation Service—VAH.** Students are assigned to the consultation service where they are responsible for working up and following patients under the supervision of the Veterans Administration Hospital chief neurology resident and faculty. This rotation provides the student with opportunities to evaluate patients with neurologic complications of medical, surgical, and psychiatric disease. Prerequisite: Neurology 5020. Fourth year.

**NEUR 5612. Clerkship in Neurology.** Senior students will evaluate neurological consultations at VU Hospital and The Vanderbilt Clinic under the supervision of residents and faculty. Opportunities to participate in EEG, EMG, ultrasound, sleep studies, botox injections, and others are available upon request. Prerequisite: Neurology 5020. Fourth year.

**NEUR 5613. Clerkship in Pediatric Neurology.** Senior students will evaluate neurological consultations at VU Hospital and participate in pediatric neurology outpatient clinics at Vanderbilt Children's Hospital. Prerequisite: Pediatrics 5020, Neurology 5020. Fourth year.

**NEUR 5614. Clinical Neuro-oncology.** Students will see consults and admissions to VUH and VAMC with cancer of the nervous system and neurological complications of cancer. They will also attend pediatric neuro-oncology clinic one morning per week and will have the opportunity to follow neurosurgical neuro-oncology patients before, during, and after surgery. Prerequisite: Neurology 5020. Fourth year.

**NEUR 5620.** Subinternship in Stroke. This is a four-week rotation in which the student will take supervised primary care of 5-6 patients on the VUMC Stroke Service, reporting directly to the resident and attending. The student will also have an opportunity to see stroke patients at the Vanderbilt Stallworth Rehabilitation Hospital and in stroke outpatient clinics. The rotation also includes participation in stroke research protocols, learning about diagnostic procedures such as MRI and CT imaging, carotid and transcranial Doppler ultrasound studies, and other laboratory tests. Prerequisities: Neurology 5020, Medicine 5020. Fourth year.

NEUR 5655. Subinternship in Neurocritical Care. The comprehensive and collaborative care of a wide range of critically ill patients that have primarily life- or organ-threatening diseases or injuries to the brain, spinal cord, peripheral nerves, or muscles. There will be exposure to a wide range of medical and surgical clinical problems such as hypertension, vascular disease, respiratory dysfunction, fluids and electrolytes, acid-base, COPD, diabetes mellitus and insipidus, myocardial dysfunction, cardiac dysrhythmias, pancreatitis, end-of-life care, infectious issues, airway management, ICU pharmacology, etc. There will be exposure to the standard, pertinent, and evidence-based issues relevant to intensive care management. These may include mechanical ventilation, vascular cannulations, point-of-care ultrasonography, resuscitation, neuroprotection, nutritional issues, etc. The opportunity to go to the OR with the assigned patients, for their neurosurgery and/or anesthesiology is available and encouraged. The students will have all associated clinical responsibilities and will participate in all the usual house-staff (interns, residents, and fellows) activities, including procedures, lectures (including the monthly ethics rounds), patient care, diagnosis, and management. Students are expected to attend the Fundamentals of Critical Care Support course (FCCS) lectures and take the exam for FCCS certification at the end of the rotation. 100 percent commitment is required. No overnight call, but may need to stay late. One day off per week. Satisfies the surgical subinternship requirement. Prerequisite: Third year core clerkships. Fourth year.

**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 6150.** Special Research Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**NEUR 6200.** Special Study—Pre-Clinical. Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**NEUR 7100. Clinical Study—Non-VU.** 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.

# Non-Medical Studies

**NMED 6200.** Special Study—Pre-Clinical. Students who are approved to take a course in another school at Vanderbilt are registered for a non-medical elective credit. Approval required. First and second year.

# Obstetrics and Gynecology

OBGN 5020. Obstetrics-Gynecology Core Clerkship. Each member of the third-year class is assigned to the obstetrics and gynecology service for five-and-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-onehalf 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 5425.** Reproductive Health and Sexuality. This course is intended to give students a broad overview of reproductive health issues. Topics will include sexual function and dysfunction, contraception, infertility, STDs, sexual differentiation, ethics, and medico-legal issues. Classes will generally consist of interactive lectures and case discussions. This course needs a minimum of five students to be offered. First and second year.

OBGN 5620. Clerkship in Maternal/Fetal Medicine. During this rotation, the student receives advanced training in high-risk obstetrics at the student level. Students help to direct both the antepartum and postpartum care of several complications of pregnancy, including preterm labor, PPROM, and pregnancy-induced hypertension. By the end of the rotation, the student should be familiar with the main complications of pregnancies, 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 in obstetrical clinic, with additional time spent in diabetic clinic, obstetrical ultrasound clinic, and the clinics of several MFM attendings; weekly fetal monitor conference; bimonthly obstetrical ultrasound conference; 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. Prerequisite: OBGN 5020. Fourth year.

OBGN 5620. Subinternship in Maternal Fetal Medicine. During this rotation, the student receives advanced training in high-risk obstetrics at the student level. Students help to direct both the antepartum and postpartum care of several complications of pregnancy, including preterm labor, PPROM, and pregnancy-induced hypertension. By the end of the rotation, the student should be familiar with the main complications of pregnancies, 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 in obstetrical clinic, with additional time spent in diabetic clinic, obstetrical ultrasound clinic, and the clinics of several MFM attendings; weekly fetal monitor conference; bimonthly obstetrical ultrasound conference; 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. Prerequisite: OBGN 5020. Fourth year.

OBGN 5640. Clerkship in Reproductive Endocrinology and Infertility. During this rotation, the student receives training in the management of gynecologic endocrine and infertility patients. The student participates in the evaluation and management of women with gynecologic endocrinology problems and the infertile couple, including hysterosalpingography and sonohysterography, and assists in their operative care, which includes experience in advanced laparoscopic techniques. By the end of the rotation, the student should be familiar with the diagnosis, evaluation, and treatment of the common causes of infertility, and the evaluation of other gynecologic endocrine disorders. Specific learning activities include attendance in the REI Clinic and patient management discussion; assistance with the operative cases of the service, with attention paid to the preoperative evaluation, as well as the postoperative management; observation of vaginal ultrasound, including follicular monitoring associated with ovarian stimulation; and attendance at the weekly reproductive endocrinology and infertility seminar. Prerequisite: OBGN 5020. Fourth year.

**OBGN 5645. Subinternship in Benign Gynecology.** During the rotation, the student will receive both didactic and clinical training, as well as practical experience in the diagnosis and management of a breadth of ambulatory and surgical gynecologic problems. The student will participate in office and preoperative evaluation, in addition to ambulatory and surgical management of patients. The student will be expected to attend didactic lectures and seminars of the ob-gyn department and prepare a presentation on a topic of interest to be determined in consultation with one of the attending faculty. Prerequisite: OBGN 5020. Fourth year.

**OBGN 5650.** Subinternship in 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. 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. Prerequisite: OBGN 5020. Fourth year.

**OBGN 5660.** Subinternship in Urogynecology: Female Pelvic Medicine and 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 postoperative 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 physician exam of pelvic floor defects are also emphasized. Prerequisite: OBGN 5020, Medicine 5020, Surgery 5020. Fourth year.

**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 6150. Special Research Study—Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**OBGN 6200. Special Study—Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required. First and second year.

**OBGN 7100. Special Clinical Study—Non-VU.** 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.

## Ophthalmology and Visual Sciences

**OPH 5260. The Eye as a Sentinel of Systemic Disease.** Virtually every systemic disorder can result in ocular manifestations. Regardless of area

of specialization, physicians will encounter patients with eye complaints. Distinguishing between benign conditions and those eye signs which herald serious systemic disease can be critical. This elective will be structured as a problem-based approach in which students participate in the differential diagnosis. The course will also familiarize the student with the distinguishing features of many eye disorders. Following the course, students will be able to recognize common ophthalmic conditions and understand the significance of many visual symptoms and eye findings. First and second year.

**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.** Clerkship in Ophthalmology. An intensive clinical experience in ophthalmology which includes inpatient, outpatient, and operating room assignments. There is one-to-one supervision by the resident staff and Ophthalmology Department staff. At the completion of this clerkship, the student should have mastered all basic ophthalmologic exam techniques including visual acuity, external exam, slit lamp examination, ophthalmoscopy, and visual fields. Students must receive pre-approval from the Department of Ophthalmology for this clerkship in July, August, and September. Prerequisite: Surgery 5020. Fourth year.

OPH 5630. Clerkship in Community Ophthalmology (Oculoplastic Based). This course introduces students to community based ophthalmology through community oculoplastic practice and association with other community practices covering all aspects of ophthalmology. The oculoplastic base allows students a one-on-one opportunity to directly participate in patient care enhancing competence such as fine suture technique of face and eyelids, interpretation of orbital imaging studies such as MRI and CT, and the recognition of significant histopathology of orbit and eyelid lesions. The course has flexibility for exposure to community practice in other areas of ophthalmology such as cataract, refractive, retinal, and glaucoma. The course combines close integration and participation of the student in the oculoplastic team with opportunity to develop competency examination skill sets beyond basic medical student level to include slit lamp examination, indirect ophthalmoscopy, and basic refraction -- general skills required in the practice of oculoplastic surgery. Prerequisite: Surgery 5020, OPH 5610. Pre-approval required. Fourth year.

**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 6150. Special Research Study—Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**OPH 6200. Special Study—Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required. First and second year.

**OPH 7100. Special Clinical Study—Non-VU.** 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 5130. Subspecialty Clinics in Orthopaedic Surgery.** This course offers the student an opportunity to rotate through the various orthopaedic clinics. Eight to nine clinic meetings per week are required. Prerequisite: Surgery 5020.

**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.** Subinternship in Foot and Ankle Orthopaedic Surgery. The student will be asked to evaluate patients with foot and ankle disorders in both inpatient and outpatient settings. The student will be expected to participate in preoperative and postoperative patient evaluation and management, as well as surgical management. At the conclusion of the rotation, the student should have an in-depth understanding of arthritis, foot and ankle fractures, sports medicine of the foot and ankle, and common deformities. Orthotic and pedorthic management will also be taught. Prerequisite: Surgery 5020. Fourth year.

**ORTH 5612.** Subinternship in Adult Hand Orthopaedic Surgery. The course provides hands-on exposure to adult hand surgery. The student will be able to integrate medical and surgical knowledge in the care of patients with congenital hand deformities and musculoskeletal hand injuries in both inpatient and outpatient settings. Emphasis will be placed on initial evaluation, preoperative and postoperative management. Prerequisite: Surgery 5020. Fourth year.

**ORTH 5613.** Subinternship in Orthopaedic Oncology. The course provides hands-on exposure to musculoskeletal oncology and adult orthopaedics. The student will be able to integrate medical and surgical knowledge in the care of orthopaedic patients, in both inpatient and outpatient settings. Prerequisite: Surgery 5020. Fourth year.

**ORTH 5614.** Subinternship in Pediatric Orthopaedic Surgery. This course will provide the student with experience assessing and managing pediatric orthopaedic surgical patients. Emphasis will be placed on pertinent history taking, evaluation of the child, and decision making and treatment in both inpatient and outpatient settings. Prerequisite: Surgery 5020. Fourth year.

**ORTH 5615.** Subinternship in Reconstructive Orthopaedic Surgery. The course provides hands-on exposure to adult reconstructive surgery. The student will be able to integrate surgical knowledge in the care of orthopaedic patients in both the inpatient and outpatient settings. Prerequisite: Surgery 5020. Fourth year.

**ORTH 5617. Subinternship in Adult Spine Orthopaedic Surgery.** The student will be asked to integrate medical and surgical knowledge in the care of patients with spine-related deformities and injuries in the hospital and outpatient clinics. Students will receive an introduction to outpatient assessment and inpatient management of individuals with a wide variety of spinal disorders. The course is designed to provide a proper assessment of patients with neck and low back pain, as well as spinal injuries with neurological involvement. The student will be expected to participate actively in the emergent, preoperative, surgical, postoperative hospital, and outpatient diagnostic and therapeutic care of orthopaedic patients. Prerequisite: Medicine 5020, Surgery 5020. Fourth year.

**ORTH 5618.** Subinternship in Sports Medicine. The course is designed to provide hands on exposure to orthopaedic sports medicine. The student will be asked to integrate medical and surgical knowledge in the care of patients with sports-related injuries in the hospital and outpatient clinics. Participation in patient care will be defined by the chief resident. The student will be expected to participate aggressively in the emergent, preoperative, surgical, postoperative hospital, and outpatient diagnostic and therapeutic care of sports medicine patients, athletic injuries, and all injuries of the knee and shoulder. Prerequisite: Surgery 5020. Fourth year.

**ORTH 5619.** Subinternship in Adult Orthopaedic Trauma. The course is designed to provide hands-on exposure to orthopaedic traumatology. The student will be asked to integrate medical and surgical knowledge in the care of trauma victims and musculoskeletal injuries in the hospital and outpatient clinics. Participation in patient care will be defined by the chief resident. The student will be expected to participate aggressively in the emergent, preoperative, surgical, postoperative hospital, and outpatient diagnostic and therapeutic care of orthopaedic patients. Prerequisite: Medicine 5020, Surgery 5020. Fourth year.

**ORTH 5620. Primary Care Orthopaedics.** This course is designed to provide students interested in primary care or non-surgical specialties with an in-depth experience in adult musculoskeletal disease. Focusing primarily on the examination and evaluation of patients with musculoskeletal problems, the student will rotate through general and specialty orthopaedic clinics and participate in the evaluation and treatment of acute orthopaedic trauma in the emergency room. Participation in daily orthopaedic conferences and teaching rounds will broaden the scope of the student's exposure to orthopaedic surgery. The presentation of a case-focused conference at the conclusion of the rotation will be expected of each student. This course is not recommended for those intending to pursue a career in orthopaedic surgery. Prerequisite: Surgery 5020. Fourth year.

**ORTH 5625.** Subinternship in General Adult Orthopaedics—VAH. This course is based in the Veterans Administration Hospital and provides a wide exposure to inpatient and outpatient orthopaedic surgery ranging from trauma and sports medicine to reconstruction. The student is expected to integrate book knowledge with patient care. A tremendous hands-on experience is available to a host of musculoskeletal pathology. Prerequisite: Surgery 5020. Fourth year.

**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 6150. Special Research Study—Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**ORTH 6200. Special Study—Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**ORTH 7100. Special Clinical Study—Non-VU.** 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 important, 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 paradiams.

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 5950. Laryngology. This course is an elective in otolaryngology focusing on problems with the voice, airway, and swallowing. It is based out of the Vanderbilt Voice Center and includes participating in the clinical and surgical management of patients with disorders affecting the larynx and the upper aerodigestive tract. Students will spend time in the voice center clinics with a staff laryngologist, learning the specialized evaluation of the voice and swallowing patient. This would include hands-on experience with laryngeal videostroboscopy. Students would also learn the specifics of the standard otolaryngology head and neck examination. Other members of the elective faculty include voice scientists and speech language pathologists who regularly perform voice evaluations and therapy for our patients. Significant time would also be spent in the operating room learning endoscopic management of laryngeal pathology and airway disorders as well as the surgical management of vocal fold paralysis. Prerequisite: Surgery 5020. Fourth year.

**OTO 5970. Subinternship in Otolaryngology.** Students will work with the otolaryngology staff and residents on the otolaryngology service at Vanderbilt University Hospital participating in the diagnosis and treatment of patients with otolaryngologic and head and neck diseases. Attendance at the weekly otolaryngology grand rounds is mandatory. Prerequisite: Surgery 5020. Fourth year.

**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 6150. Special Research Study—Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**OTO 6200. Special Study—Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**OTO 7100. Special Clinical Study—Non-VU.** 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 5610.** Clerkship in Autopsy Pathology. The student will assist in post-mortem examination with the full-time staff and will correlate the clinical and pathological features in an attempt to understand the pathogenesis of the fatal disease processes. Recommended for students considering residencies in pathology. Prerequisite: Preclinical curriculum. Fourth year.

**PATH 5620. Clerkship in Surgical Pathology.** The experience will include the Surgical Pathology areas in both Vanderbilt University Hospital and Monroe Carell Jr. Children's Hospital at Vanderbilt. The student will work with the surgical pathology faculty, fellows, and residents in evaluating gross and microscopic material from current cases. Emphasis will be placed on introducing the student to the relationship that surgical pathologists maintain with clinical colleagues in caring for patients. In this elective, there will be opportunity to see medical biopsies and larger specimens from most surgical specialties. Appropriate short research projects will be available for the interested student. Opportunities exist for the student to work in Cytology and subspecialty areas also, depending on interest. Prerequisite: Preclinical curriculum. Fourth year.

PATH 5630. Clerkship in Clinical Pathology. Clinical pathology is composed of multiple diverse laboratory services that provide diagnostic testing for all areas of medical practice: blood bank, clinical chemistry, special chemistry (including toxicology), hematology and urinalysis, special hematology (bone marrow and lymph nodes analysis), hemostasis, microbiology and virology, molecular infectious disease, molecular genetics, and immunopathology (including flow cytometry). The student may rotate in one or multiple labs. Training is individualized based on the interests and future plans of the student. 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 the tests in the areas of the lab through which the student has rotated for diagnosis and monitoring of diseases. Prerequisite: Preclinical curriculum. Fourth year.

**PATH 5650. Clerkship in Clinical Microbiology.** The basic goal of this one month rotation is to gain an appreciation of clinical microbiology, including basic bacteriology, mycology, and mycobacteriology. The preceptor method will be used in doing bench work under supervision followed by independent bench work. Self-education through reading the text, Koneman: *Basic Microbiology*, will be required. Unusual and interesting cultures can be pursued by review of patient charts or examination of the patient, if appropriate. The clinical aspects are coordinated through the infectious disease service and include participation in their rounds. Prerequisite: Preclinical curriculum. Fourth year.

PATH 5680. Clerkship in 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. This course does not meet in December. Prerequisite: Third year core clerkships. Fourth year.

**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 6150.** Special Research Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**PATH 6200. Special Study—Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**PATH 7100. Special Clinical Study—Non-VU.** 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.

#### Pediatric Medicine

**PED 5020.** Pediatrics Core Clerkship. Each member of the third-year class is assigned to Pediatrics for five and one-half weeks. Three and one-half weeks are spent on the Monroe Carell Jr. Children's Hospital at Vanderbilt inpatient pediatric wards. Students participate in all phases of diagnosis and treatment of a wide variety of illnesses of children and infants. Two and one-half 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 the 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 divided into two one-week blocks. Students will do one week each on the inpatient pediatric hematology-oncology service and the outpatient clinics. During the inpatient week, students will join a team of residents, fellows, and attending physicians on the pediatric hematologyoncology 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. During the outpatient week, students will attend all hematology and oncology clinics in the outpatient setting. Clinic opportunities are vast and will include exposure to general oncology for routine chemotherapy and sick visits and benign hematology. New referrals will also be seen. Students may also attend subspecialty clinics to gain a general overview of specific diseases (e.g., brain tumors, sarcomas, hemophilia, and stem cell transplant). At the conclusion of the two week elective, students will be able to do a history and physical examination on an oncology patient in both the inpatient and outpatient 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 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 twoweek 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 multi-disciplinary nature of treatment options can be approached through interpersonal interactions with patients, families, and members of the clinical teams.

PED 5340. Electronically-Engaged Pediatric Family Consult. This elective involves working as a consultant to engage pediatric patients and their families in managing their health through information technologies. Students will work with a variety of pediatric providers in the inpatient, outpatient, and acute care settings. Consultations will focus on educating and supporting families with new diagnoses and chronic illnesses using mobile devices, the MyHealthAtVanderbilt patient portal, or other technologies to assist with disease monitoring or behavior change. With each new consultation, students will independently evaluate the patient and family, present the case to a multi-disciplinary team, explore technologies to address the information and disease-management problems, and work with the family to implement the proposed solutions. Students may also have opportunities to provide follow up from prior consultations and to participate in ongoing research studies of patient engagement through information technologies. At the end of this rotation, the student will have a familiarity with the roles of information technology in health and disease management, as well as the importance of literacy, numeracy, and computer skills in facilitating patient engagement.

PED 5345. Pediatric Cardiology. Students participating in this two-week 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 5400. Pediatric Clinical Rounds.** The pediatric chief residents will lead a small group of students in examination of pediatric patients at the Children's Hospital. Our goal is to provide an enjoyable and provocative opportunity to supplement the Physical Diagnosis course with hands-on pediatric experience. Prerequisite: First-year curriculum. Second year.

PED 5611. Subinternship in Pediatric Medicine. Students will serve as externs on the wards of Monroe Carell Jr. Children's Hospital at Vanderbilt. They will serve on a team and assume intern responsibilities with supervision and countersignature of orders/notes by second- and third-year residents. Patient assignments will usually be limited to five admissions per call night. Externs may pick up patients on non-call days depending on their census. Call is every fourth night. This rotation fulfills the subinternship requirement in the fourth year. Students may request any of the four teams, but placement is dependent on availability. The teams include Hazinski (Hospitalist and Pulmonology); Karzon (Neurology and Gastrointestinal); Christie (Cardiology and Nephrology); and Team D (non-resident hospitalist service). Inclusion on Team D requires approval from the course director. In order to ensure the strong clinical experience which characterizes this elective, each clinical clerkship is built into the housestaff rotational schedule. Therefore, the pediatric service

relies heavily on each student who is accepted into this course. We ask that the student consider his/her enrollment as a strong commitment to serve. Students may be excused from ward duties for no more than three days for interviews or other absences, unless special permission is obtained from the course director and the associate dean for medical student affairs. Prerequisite: Pediatrics 5020. Fourth year.

PED 5635. Subinternship in Pediatric Hematology/Oncology. Upon completion of this course, students 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 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. Students will 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, students will see both new patients and patients returning for therapy. Students will take a history from the family, perform a physical exam, interpret lab tests, present these patients to the faculty, and write notes. Students 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). Prerequisite: Third year core clerkships. Fourth year.

**PED 5650. Clerkship in Pediatric Developmental Medicine.** Students will learn about a variety of developmental disabilities in infants, children, and adolescents, including developmental delays, cognitive/intellectual disability, Down syndrome, learning disabilities, attention deficit hyperactivity disorder, behavior disorders, autism spectrum disorders, motor disorders, and speech-language disorders. They will observe in-depth evaluations by developmental pediatricians and psychologists at the Center for Child Development. They will also participate in several didactic learning sessions. In addition, students will visit community agencies serving children with special needs and their families. This rotation provides minimal opportunity for direct patient care experience, but instead offers several venues for learning about developmental and behavioral disorders. Prerequisite: Pediatrics 5020. Fourth year.

**PED 5680. Clerkship in Pediatric Cardiology.** This course is a clinical clerkship in pediatric cardiology. The purpose of the course is to provide the student with expertise in clinical evaluation of cardiovascular disease in infants, children, and adolescents. It will be particularly useful for students planning a career in pediatrics or cardiology. The student is a full-time, active participant in the pediatric cardiology clinical service team. The clerkship includes exposure to EKG interpretation, echocardiography, and cardiac catheterization, with a particular focus on physical examination skills. Prerequisite: Pediatrics 5020, Medicine 5020, Fourth year.

**PED 5690.** Clerkship in Pediatric Endocrinology. Students who participate in this clerkship will be able to identify the common endocrine problems of childhood, propose appropriate diagnostic studies, and formulate long-term management plans. Growth disorders, diabetes, thyroid disease, and adrenal disease will be the most common conditions encountered, including abundant referrals for new-patient evaluations. The clerkship combines patient contact in the hospital and ambulatory setting with ample time for case discussions with faculty. Prerequisite: Pediatrics 5020. Fourth year.

**PED 5700.** Clerkship in Pediatric Hematology-Oncology. Once students have finished this elective, 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 elective 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 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 elective 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). Prerequisite: Pediatrics 5020. Fourth year.

PED 5710. Clerkship in Pediatric Gastroenterology, Hepatology, and Nutrition. Students actively participate in the care of pediatric gastroenterology outpatients and inpatients at Vanderbilt Children's Hospital. The rotation provides a broad experience in the evaluation and management of common as well as unusual gastroenterological, hepatic, and nutritional diseases of childhood. Attendance in the endoscopy laboratory permits familiarity with esophagogastroduodenoscopy, colonoscopy, polypectomy, and percutaneous liver biopsy. Rounds include daily review of histopathology specimens and radiographic studies. Custom-designed rotations emphasizing nutritional support or outpatient experience can be arranged. Prerequisite: Pediatrics 5020. Fourth year.

**PED 5720. Clerkship in Pediatric Nephrology.** Students actively participate in the evaluation and management of pediatric nephrology patients seen at Monroe Carell Jr. Children's Hospital at Vanderbilt. Through a combination of inpatient and outpatient experiences, the student will increase his/her knowledge of renal physiology and pathophysiology, congenital abnormalities of the kidneys and urinary tract, glomerular diseases, and hypertension. Prerequisite: Pediatric 5020; Medicine 5020. Fourth year.

PED 5730. Clerkship in Child Abuse Pediatric Medicine. Students will work in the Child Abuse Pediatrics Program based at Monroe Carrell Jr. Children's Hospital at Vanderbilt. Students will participate in consultations on children referred for evaluation for possible abuse and/or neglect, whether they are in- or outpatients. Students will learn the basics of performing an abuse evaluation, the importance of close attention to detail, the mechanics of taking good photographs of injuries, and clear documentation. The radiology of child abuse will be taught during rounds with pediatric radiologists. Students will participate in and assist with chart reviews requested by outside agencies to further their understanding of the appropriate evaluation of potential victims of abuse. Students will also participate in multidisciplinary meetings in the community, observe sworn testimony in court or during depositions, and gain understanding of the legal system as it applies to cases of child abuse and neglect. Prerequisite: Pediatrics 5020. Fourth year.

PED 5740. Clerkship in Pediatric Pulmonary Medicine. Students in this course will participate in consultations on children referred for evaluation of lung disease in the hospital and in the outpatient clinic. The purpose of this elective is to provide the student with expertise in the clinical evaluation of pulmonary disease in infants, children, and adolescents, and students will gain expertise in the relevant history, physical exam findings, and diagnostic testing used in a pulmonary evaluation. Participation in multi-disciplinary clinics in cystic fibrosis, bronchopulmonary dysplasia, and asthma will facilitate training in caring for children with chronic lung diseases. Didactic experiences that will reinforce the patient care experiences include our weekly Pediatric Pulmonary Imaging Conference, our weekly Pediatric Pulmonary Core Curriculum Conference, and other monthly conferences that constitute our fellowship training program. Students will have the opportunity to participate in bronchoscopies. Prerequisite: Pediatrics 5020. Fourth year.

PED 5750. Clerkship in Pediatric Rheumatology. Students will participate in the evaluation and care of children referred to the pediatric rheumatology program at 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.** Spanish Language Pediatrics Clinic. The purpose of this elective is to expose fourth-year medical students who are proficient in Spanish to the Latino population in Nashville. The course will be particularly beneficial to fourth-year medical students to increase fluency in Spanish and learn appropriate terminology used during their medical encounter. Students will provide direct patient care in the Spanish Language Clinic within the Vanderbilt Pediatric Primary Care Clinic, and will interact with the community clinics that provide care to large Spanish-speaking populations. The elective will also expose them to community organizations that are working with Latino children in Nashville. Supplemental reading and other media related to the immigrant population will be used to augment student understanding of the Latino Immigrant experience and its impact on the health of this population. Prerequisite: Pediatrics 5020. Fourth year.

**PED 5800. Genetic Clerkship.** Students participate in evaluating, diagnosing, and counseling patients and families seen in the genetics and genetics outreach clinics as well as ward consults. Students will gain experience with a variety of single gene disorders, malformation syndromes, and biochemical, chromosomal and molecular abnormalities. They will participate in weekly research and clinical conferences. Selected research projects in clinical genetics, dysmorphology, molecular genetics, or neurogenetics are also available. Prerequisite: Faculty approval. Fourth year.

**PED 5815. Subinternship in Neonatology.** Students will serve as clerks on the newborn special care service of VU Hospital. They will have all associated clinical responsibilities and will participate in all the usual house staff activities. This elective requires a 100 percent commitment of the student's time. The student will participate in in-house night call. Prerequisite: Faculty approval. Fourth year.

PED 5830. Subinternship in Pediatric Emergency Medicine. The purpose of this subinternship is to provide the student with expertise in the clinical evaluation and management of critically ill and injured pediatric patients, and pediatric emergencies. This course will be particularly useful for students planning a career in pediatric or emergency medicine. The subinternship will require fifteen eight-hour shifts. The student will work directly with the pediatric emergency fellow and attending during that shift. The student will be directly responsible for the evaluation, assessment, and management of the patient, including any procedures. Students will participate in weekly Fellow conferences as well as journal clubs. They will give a one-hour, didactic, case-based presentation at one of the fellow conferences during the month. In addition, they will review and discuss one article for journal club. The presentations will be mentored by the pediatric EM fellow and attending. Students may also participate in simulation scenarios and in teaching regional paramedics at their institutions. Students will have required basic reading to augment their knowledge base in pediatric emergency medicine management. Fourth year,

**PED 5910.** Clerkship in Pediatric Infectious Disease. The central objective of the elective clerkship in pediatric infectious diseases is to learn to evaluate children with infectious diseases. Core reading on the pathophysiology of infectious disease will be encouraged. Students will actively participate in ambulatory and hospital care of children with infectious diseases. Prerequisite: Pediatrics 5020. Fourth year.

**PED 5990.** Subinternship in Pediatric Critical Care. The elective will be geared towards fourth-year medical students interested in pursuing pediatric residency, emergency medicine, or anesthesia. The objectives will be (1) understanding of the complex pathophysiology of critically ill children, (2) learning the basic principles of multidisciplinary management of critically ill children, and (3) detailed review of a few common diseases seen in a multidisciplinary pediatric critical care unit. The student will be expected to participate in all the teaching conferences of the division. Additionally, the student will be expected to stay overnight at least four times during the four weeks' rotation, and will be expected to review topics presented in a formal setting. Prerequisite: Pediatrics 5020. Fourth year.

**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 6150. Special Research Study—Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**PED 6200. Special Study—Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**PED 7100. Special Clinical Study—Non-VU.** 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.

# Pharmacology

**PHAR 6100. Special Clinical Study-Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**PHAR 6150.** Special Research Study-Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**PHAR 6200. Special Study-Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

#### Preventive Medicine

**PM 5410. Health Services in the Community.** These are introductory sessions on the organization of health services, and orientations to Vanderbilt University Medical Center and Nashville. There will be assignments to community-based services, including visits to patients with a nurse in the Vanderbilt Home Nursing Program. Other community sites include primary care centers and special programs, including Alive Hospice, a service center for homeless persons, and a clinic serving primarily immigrants and refugees. First and second year.

PM 5720. Clerkship in Epidemiology at the CDC. At the Centers for Disease Control (CDC) in Atlanta, students will be introduced to the principles and practices of epidemiology through participation in the day-to-day operation of a national disease surveillance system, and by actively assisting in epidemiological investigations. Students often have an opportunity to participate in a field investigation. Insofar as possible, students will be allowed to choose the program area to which they wish to be assigned. Under the general supervision of a senior staff member, the student, in addition to assisting in epidemic investigations, will work in all phases of program activities. The program areas include communicable diseases (salmonella, shigella, tetanus, hospital-acquired infections, hepatitis, neurotropic viruses, etc.), vaccine utilization (measles, rubella, polio, etc.), family planning evaluation, leukemia surveillance, etc. Travel and living expenses while in Atlanta, and basic transportation costs between home (Medical School) and Atlanta must be borne by students. Combinations of vacation time and elective time may be arranged. NOTE: Students must submit an application to the CDC. The CDC deadline for applications is March 30 of the third year of medical school for elective periods during Sept.-Dec. of the student's fourth year; it is May 30 for electives starting after January of the fourth year. Occasionally later applications will be considered, but the general rule is the earlier the application, the more likely your acceptance into the program. Application can be obtained from CDC by visiting the website: cdc.gov/eis/applyeis/elective.htm. Dr. Schaffner is closely associated with the CDC activities and can describe them in detail and facilitate your application. Prerequisite: Enrollment requires faculty approval. Fourth year.

**PM 7100. Special Study Preventative Medicine—Non-VU.** 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 postacute care continuum.

PMR 5611. Introduction to Physical Medicine and Rehabilitation. This course is designed to provide hands-on 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 hospitalization and the student will have an opportunity to follow the patients post-acutely. The student will be asked to integrate medical and surgical knowledge in the care of rehabilitation in the hospital and outpatient clinic. The attending physician on the PM&R service will define participation in patient care. The student will be expected to participate in the evaluation, functional diagnosis, and treatment of individuals with significant impairment and disability who require long-term hospitalization to achieve maximal independence. 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. Outpatient clinics are available to expose students to the long-term problems which these patients encounter. Fourth year.

**PMR 6100. Special Clinical Study – Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of clinical work. Approval required.

**PMR 6150.** Special Research Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**PMR 7100.** Special Clinical Study—Non-VU. Each student arranges an independent study with a mentor and completes a period of clinical work away from Vanderbilt. Approval required.

PMR 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.

### Physiology

**PSIO 6100.** Special Clinical Study — Vanderbilt. Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**PSIO 6150. Special Research Study—Physiology.** Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**PSIO 6200. Special Study—Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. 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 and the Psychiatric Hospital at Vanderbilt (Adult/Adolescent/Child). Third 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 5615. Clerkship in Public Psychiatry.** A variety of clinical experiences are available for students in community psychiatry settings. The constant focal points are at the Downtown Clinic with Dr. Stovall and the monthly Shade Tree psychiatry with various Vanderbilt attendings. Time in specialized clinics at the Centerstone outpatient facilities is also arranged, often with special interests of the student as a focus. In each of these settings, students will serve as integral members of the treating team with supervision of care and discussion of notes by the attending. Direct patient care will include evaluating, diagnosing, and treating a wide variety of acutely ill psychiatric patients. Students will gain experience managing an acute psychiatric service as well as gaining exposure to the practice of psychiatry in the community mental health system. Prerequisite: Psychiatry 5020; Medicine 5020. Fourth year.

PSYCH 5617. Clerkship in Alcohol and Drug Dependence. This elective will consist of care of patients undergoing alcohol and drug dependence rehabilitation in the Vanderbilt Addiction Center (VAC) [formerly VITA] unit under the leadership of members of the Division of Addiction Psychiatry. Students will have responsibility for the psychiatric care of patients in regular work and teaching rounds, reviewing rehabilitation plans for the patients and participating in group therapy discussions, attending staff conferences, and developing a comprehensive knowledge of the detoxification and rehabilitation of persons with substance use disorders and their medical and psychiatric complications. They will learn the team concept of care through a multidisciplinary approach employing medical and psychiatric nursing care, social services, group therapy, nutritional assessment, occupational and vocational rehabilitation, and exercise. Emphasis will be on family dynamics, demonstrating the dysfunctional family relationships that occur in chemically dependent patients. The special programs of Alcoholics Anonymous, Al-Anon, and Narcotics Anon groups will be available both on the unit and in the community. The after-care of patients will be demonstrated. The student will have the opportunity to share in clinical responsibility for the care of these often complex patients under the daily supervision of the attending. Prerequisite: Psychiatry 5020. Fourth year.

**PSYCH 5620. Subinternship in Neuropsychiatry.** This subinternship 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. Prerequisite: Psychiatry 5020, Neurology 5020, fourth year rotations in both Psychiatry and Neurology. Requires faculty approval. Fourth year. Offered September, October, January, February, March, and April.

#### PSYCH 5625. Subinternship in Child Psychiatry Consultation-Liaison.

This subinternship 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 post traumatic 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 with the faculty if available at that time. Prerequisite: Psychiatry 5020, Neurology 5020, Pediatrics 5020. Fourth year.

**PSYCH 5635. Clerkship in Emergency Psychiatry.** In the Psychiatric Treatment Unit (PTU) 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, observed Beds, OB/GYN triage, and in the PTU. Patients treated will be above the age of 18 years. Prerequisite: Psychiatry 5020. Fourth year.

**PSYCH 5638.** Adult Outpatient Psychiatry. Students will become primarily active contributors to evaluation and treatment clinics in adult outpatient psychiatry. Time is also arranged shadowing clinics, participating in the monthly ShadeTree psychiatric consultation clinic, and in a weekly community (Downtown) psychiatry clinic. Sessions sitting in on psychotherapy 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). This will also include didactic teaching, case presentations, treatment planning, chart review and group supervision. Prerequisite: Psychiatry 5020. Fourth year.

**PSYCH 5639.** Clerkship in Child and Adolescent Psychiatry. Students will have the opportunity to shadow child psychiatrists in outpatient, inpatient, and school-based consultation settings. Assigned readings supplement patient care experiences. Students are occasionally expected to follow patients with attending/resident supervision. Special projects are optional for students and may include research and writing activities. Prerequisite: Medicine 5020; Surgery 5020; Psychiatry 5020. Fourth year.

PSYCH 5645. Subinternship in Adult Consultation-Liaison Psychiatry. The adult consultation team 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 and outpatient settings at Vanderbilt University Hospital, Stahlworth Rehabilitation Hospital, and Vanderbilt Health One Hundred Oaks. Commonly treated conditions include delirium, dementia, depression, suicide attempts, capacity evaluations, agitation management, altered mental status, conversion disorder, addictions, and somatoform disorders. 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 fellows and attendings. A partial focus on areas of special interest to the student may be arranged. A clinical topic presentation or paper in case report format will be required. Prerequisite: Psychiatry 5020. Fourth year.

**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 6150. Special Research Study—Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of research work at Vanderbilt. Approval required.

**PSYCH 6200. Special Study—Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**PSYCH 7100. Special Clinical Study—Non-VU.** 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 Monroe Carell Jr. Children's Hospital at Vanderbilt (MCCHV). 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. Radiology Elective. The course will provide students with a broad exposure to the various subspecialties of radiology and will provide focused training on basic chest x-ray interpretation. The students will spend each morning in a different 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?"). The afternoons will be spent attending didactic lectures and participating in the focused chest x-ray "boot camp." Each afternoon there will be a one-hour lecture on one of the different radiology subspecialties. Students will use the knowledge gained in the didactic session along with content from the boot camp handout to work through the various chest films with the course director. Each day the films will be slightly more difficult than the day before. 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 and 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 postoperative 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 fluoroscopicallyguided 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. Clerkship in Diagnostic Radiology. The student participates in a variety of learning experiences in diagnostic radiology. These include reading materials designed for medical students, a didactic lecture series by the radiology staff, round table discussions of appropriate radiographic evaluation of patients, rotations through the various subspecialty divisions of radiology, and various film reading sessions. The purpose of this course is to provide the fourth-year medical student with the fundamentals of diagnostic imaging and an understanding of optimal imaging pathways for various clinical conditions. Attendance and participation are required. This course is not well-suited for the student who needs excessive time off away from the rotation. Prerequisite: Medicine 5020, Surgery 5020, Pediatrics 5020, and Obstetrics/Gynecology 5020. Fourth year. Offered August, September, October, November, February, March, and April. This course requires a minimum enrollment of three students.

**RAD 5630.** Clerkship in Pediatric Radiology. This program will introduce the fourth-year medical student to the principles of diagnostic imaging in pediatric radiology. The medical student will function primarily as an observer during the interpretation of radiographs and the performance of procedures. S/he will be expected to correlate clinical presentation of the patient with the radiologic imaging studies in order to develop a mature appreciation of the role of pediatric imaging and the practice of clinical pediatrics. Prerequisite: Fourth-year status. This course is offered July, August, September, November, January, February, and April.

RAD 5640. Clerkship in Neuroradiology. Students will cover both adult and pediatric neuroimaging during their rotation. The month will allow a broad exposure to the field of neuroradiology. Students will primarily cover readouts with Dr. Megan Strother (adult neuroradiology) and Dr. Curt Wushensky (pediatric neuroradiology). Working with the radiology residents, students will review cases prior to readouts, correlating clinical histories with radiographic findings. Students will be responsible for weekly case presentations during the neuroradiology case conferences. Reading assignments will focus on the basics of CT and MR imaging. Prerequisite: Fourth-year status. This course will be offered only in August and October.

**RAD 5650.** Clerkship in Interventional Radiology. This clerkship is designed to be an immersion in the daily life of an interventional radiologist with experience in the clinic, on rounds, and in the procedure room. Interventional radiology is a subspecialty that combines cutting edge technology with comprehensive patient care. Acting primarily as a consultant, the radiologist performs a broad spectrum of procedures and covers virtually every patient population and disease process. 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 and venous catheters, and TIPS. Prerequisite: Diagnostic Radiology. Fourth year.

**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 6150. Special Research Study—Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of research work at Vanderbilt. Approval required.

**RAD 6200.** Special Study—Pre-Clinical. Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**RAD 7100. Special Clinical Study—Non-VU.** 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. Clerkship in Therapeutic Radiology.** Students participate in initial evaluation of patients, formulation of treatment, supervision of treatment, and follow-up evaluations. Basic oncology principles to be emphasized. Student will learn indications and techniques for stereotactic, HDR, LDR and IMRT radiotherapy. Prerequisite: Fourth-year status.

**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 6150.** Special Research Study—Vanderbilt. Each student arranges an independent study with a mentor and completes a period of research work at Vanderbilt. Approval required.

**RADO 6200. Special Study—Pre-Clinical.** Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**RADO 7100.** Special Clinical Study—Non-VU. 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 third year clinical core rotation. For ten weeks each student in the third-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. Third year.

**SURG 5310.** Reconstructive Urology. Students will join a team of attendings, fellows, and residents on the reconstructive urology service at Vanderbilt University 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 prolapse, 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.

**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 two-week 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 non-operative 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 5460. Plastic Surgery Elective.** Are you interested in learning more about a surgical specialty that is so broad based as to include all age ranges from pediatrics through geriatrics and virtually the entire body from head to foot? Are you interested in meeting with full-time faculty who are recognized nationally for their contributions to the specialty of plastic surgery? Are you interested in seeing patients and examining patients who have a broad variety of clinical problems? Are you interested in interacting with the faculty in a small group to discuss these problems in detail on a weekly basis? If so, I would encourage you to consider the plastic surgery elective as a part of your educational opportunities. Prerequisite: First year curriculum. Second year.

**SURG 5470. Neurosurgery Elective.** This elective course is available to first- and second-year M.D. students as a unique opportunity to have guided access to operating room experiences via the neurosurgery department. Students will learn the basic protocol and be certified to scrub into a surgical procedure. First and second year.

SURG 5600. Transplantation Elective. The goal of this course is to introduce second-year students to the biological, clinical, and social aspects of transplantation. The course will meet for thirteen or fourteen one-and-one-half hour sessions during the fall semester. The weekly format will be discussion of clinical issues in transplant recipients. The preceptors will vary from week to week. The format may also vary depending on the wishes of the preceptors. Slides or other didactic material may be included, but the basic structure will be a seminar with questions to be answered and group discussion. A few faculty may bring transplant patients to the sessions to answer questions and interact with students. For students interested in watching transplant operations, there will be a sign-up sheet posted at the beginning of the course, and it is anticipated that a few students will have this opportunity. After the course is completed, it is anticipated that the students will have a broad understanding of the vocabulary and concepts involved in organ transplantation. They will have a grasp of the basic biological and clinical issues of transplantation and be familiar with the most important social and ethical problems in the discipline. The students should also be aware of the major complications of transplantation. An attempt will be made to include in discussion areas of current investigation in transplantation biology. Prerequisite: First-year curriculum. This course may be cancelled for low enrollment. Second year.

SURG 5612. Subinternship in Surgery—VAH. Students rotating at the Veterans Administration Hospital can elect to spend time on general surgery, vascular surgery, or cardiothoracic surgery. They 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. There will also be a weekly clinic which the student will be expected to attend. Each service has a full complement of conference activities which the students will be expected to attend. There will be close observation of the student's activities by the house staff and by the attending staff, as well. If students are interested, ample opportunity will be provided to do a brief report for possible publication. Prerequisite: Surgery 5020. Fourth year.

SURG 5614. Subinternship in Surgical Critical Care Medicine—VU. The surgical critical care clerkship provides students with a multidisciplinary approach to care of the critically ill surgical patient. Students will function in a supervised environment and be expected to fulfill the role of a surgical intern. 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, two mid-level surgical/anesthesia residents, and three surgical interns. Other staff available in the units include clinical pharmacists, respiratory therapists, and advance practice nurses. Teaching rounds are made each morning with didactic lecture 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 an essay examination given at the end of the rotation. Mid-rotation and final evaluations of each student will be conducted by the critical care fellow assigned to the unit, as well as the course director. Call expectations are one night each week and two weekend nights (total of six night-call shifts) during the rotation. Prerequisite: Surgery 5020. Fourth year.

**SURG 5615. Subinternship in Vascular Surgery.** This course will expose the student to the physical assessment of the vascular patient with correlation of diagnostic testing. Treatment options will be discussed and vascular surgical techniques emphasized. Operation experience as well as conferences, rounds, and clinic participation is expected. Prerequisite: Surgery 5020. Fourth year.

SURG 5616. Subinternship in Emergency General Surgery. The EGS service is the primary general surgery service at Vanderbilt University Hospital which handles all emergent and urgent non-trauma surgical emergencies. The service responds to all consults in the Emergency Department, inpatient, and transfers from the surrounding 85,000 square miles. The common disease processes range from "bread and butter" general surgery (appendicitis and cholecystitis) to the abdominal catastrophe. Operative cases are done in the OR with open and laparoscopic techniques. Bedside surgery for critically ill patients is a common occurrence. The EGS service performs most of the ICU PEG's and perc. tracheotomies for the adult ICUs. The medical student extern experience on the EGS service is a concentrated experience on a busy general surgical service. The student will be an integral part of the team. Students will get to see initial surgical consultation, follow patients during their hospital stay, and participate during any operative intervention. The medical student extern is expected to take a minimum of 1:4 on call with the EGS consult resident. This allows the medical student an opportunity to experience what a surgical residency is like. Evaluation will be based on feedback from faculty and the chief resident with whom you have worked. Prerequisite: Surgery 5020, third-year core clerkships. Fourth year.

**SURG 5617.** Subinternship in Colon and Rectal Surgery. The colon and rectal surgery service at VUMC offers the opportunity for fourth-year medical students to serve as subinterns. This affords the students the opportunity to take an active role in patient care while assuming some of the intern responsibilities when appropriate as well as being involved in the operating room. Operative cases range from open and minimally invasive/laparoscopic colon and rectal procedures for inflammatory bowel disease, diverticular and other benign diseases, and neoplasia to procedures for benign anorectal conditions. Students will work very closely with the three colon and rectal surgery faculty in clinic and in the operating rooms which allows for personal attention and feedback. Requires approval through the Registrar's Office. Prerequisite: Surgery 5020. Fourth year.

**SURG 5618.** Subinternship in Hepatobiliary Surgery and Liver Transplant. This rotation provides a general exposure to the fundamentals of hepatobiliary surgery and liver transplantation. The student will be expected to see patients and be a part of their care preoperatively, intraoperatively, and postoperatively in the transplant clinics, in the OR, and on ward rounds. The student will participate in transplant operations at VUMC and organ procurements, which may be performed outside of VUMC. Finally, the student will attend all transplant conferences that are held during his or her rotation. Prerequisite: Surgery 5020. Fourth year.

**SURG 5619.** Subinternship in Gastrointestinal/Laparoscopic Surgery. The senior 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. Prerequisite: Surgery 5020. Fourth year.

**SURG 5620. Subinternship in Neurological Surgery.** The student works with the resident staff and attending staff on the neurosurgical service at Vanderbilt University Hospital participating in the diagnosis and management of patients with neurosurgical problems. Prerequisite: Surgery 5020. Requires faculty pre-approval. Fourth year.

SURG 5621. Subinternship in Surgical Critical Care - VAH. This general surgery clerkship at the Veterans Administration Hospital provides students with a multidisciplinary approach to care of the critically ill surgical patient. Students will function in a supervised environment and be expected to fulfill the role of an intern. The course content emphasizes a physiologic approach to the care of critically ill general, cardio-vascular, vascular, orthopaedic, urology, ENT, and neurosurgical patients. Students will gain experience with invasive hemodynamic monitoring, mechanical ventilation, enteral/parenteral nutrition, surgical infectious disease, and management of vasoactive medications. The patient care service consists of a surgical or anesthesia attending physician, a critical care fellow, and a surgical or anesthesia intern. Teaching rounds are made each morning Monday-Friday. The student will be expected to attend the didactic lecture series at 11:00 a.m., along with the other interns and medical students rotating through Vanderbilt SICU and Neuro-ICU. A course syllabus containing educational objectives is provided to all registrants. Evaluation of the student's performance is based on clinical knowledge, basic science application, and integration into the team. There are no call expectations for this rotation. Prerequisite: Surgery 5020. Fourth year.

**SURG 5623.** Subinternship in General Surgery at St. Thomas. Students rotating at St. Thomas Hospital can elect to spend time on general surgery and vascular surgery, along with exposure to urology, gynecologic oncology, ENT and cardiothoracic surgery. They 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. There will also be a weekly clinic which the student will be expected to attend. There will be close observation of the student's activities by the house staff and by the attending staff, as well. If students are interested, ample opportunity will be provided to do a brief report for possible publication. Prerequisite: Surgery 5020. Fourth year.

SURG 5630. Subinternship in Cardiac Surgery. This course consists of an intensive four-week exposure to the patient care activities of the cardiac surgical service. Faculty will consist of members of the Department of Cardiac Surgery. Students will have the opportunity for extensive exposure to patients with a wide variety of clinical problems in acquired/congenital cardiac disease including coronary atherosclerosis and its intraoperative (coronary bypass) and percutaneous (coronary stent placement) management in the "hybrid OR," repair of cardiac valve disease using the standard and minimally invasive approaches, management of cardiac failure including ventricular assist devices, and cardiac transplantation. By special arrangement, students may rotate on pediatric cardiac surgery for their four-week rotation. The educational environment will be the outpatient clinic, operating room, ICU, and general care wards. Formal teaching conferences and didactic lectures will be provided weekly. Prerequisite: Surgery 5020. Fourth year.

**SURG 5632.** Subinternship in Thoracic Surgery. This course consists of an intensive four-week exposure to the patient care activities of the thoracic surgical service. Faculty will consist of members of the Department of Thoracic Surgery. Students will have the opportunity for extensive exposure to patients with a wide variety of clinical problems including staging and treatment of lung cancer, esophageal cancer, management of advanced thoracic neoplasms including pulmonary metastases and malignant pleural effusion, reoperative thoracic surgery, and management of end-stage lung disease with lung volume reduction surgery and lung transplantation Specific attention to multidisciplinary care in thoracic surgery, clinical trials, and health care outcomes will be provided. The educational environment will be the outpatient clinics, operating room, ICU, and general care wards. Formal teaching conferences and didactic lectures will be provided weekly. Prerequisite: Surgery 5020. Fourth year.

**SURG 5634.** Subinternship in Cardiothoracic Surgery—VAH. The Veterans Administration Hospital fourth-year mission is to provide students with the opportunity to experience a broad spectrum of cardiothoracic patient interactions from the clinic to the OR to the bedside and

beyond. Building upon the third year of medical education, the fourth-year student will be incorporated into the surgical team as a subintern and function at the level of an intern. The student will be expected to identify, discuss, and outline therapeutic options for common surgical pathologies from the simple to the complex. The student will attend the thoracic OR on Mondays and clinic on Fridays. Tuesdays, Wednesdays, and Thursdays will be spent covering the cardiac surgery service. The focus will be technical in nature and the student should arrive with basic suturing and knot typing expertise. Over the course of four weeks, the goal will be to inspire a quest for surgical knowledge and technique that will be the impetus for a surgical career. The student will develop an understanding of the processes at work in defining thoracic pathology and the operative techniques employed to surgically correct or remove it. Prerequisite: Surgery 5020. Fourth year.

**SURG 5640.** Subinternship in Urology. The student will work with the full-time faculty and the urology resident staff in the day-to-day care of patients on the urology service. This clerkship will provide an in-depth experience in the care and treatment of a patient population that is commonly seen at a tertiary care hospital. Operative experience will be quite extensive. Participation on this clerkship also involves attendance at the various department-wide conferences held from time to time during the week. This is an intensive and comprehensive clerkship for those considering urological residency or other postgraduate surgical training, or for those seeking an overview of urologic surgery position. Prerequisite: Surgery 5020. Fourth year.

**SURG 5660.** Subinternship in Pediatric Surgery. This course provides an opportunity for students to work on the wards and in the outpatient department caring for children in pre-operative, operative, and post-operative periods and attending both pediatric and surgical conferences. Daily rounds are held. Prerequisite: Surgery 5020, Pediatrics 5020. Fourth year.

**SURG 5670. Subinternship in Surgical Oncology.** This general surgery course offers inpatient and outpatient clinical experience in treatment of patients with primary as well as recurrent or inoperable malignant tumors at Vanderbilt University Hospital. Emphasis is on principles of comprehensive management of patients with malignant disease. The student will gain experience in the multimodality treatment approach to cancer. Prerequisite: Surgery 5020. Fourth year.

**SURG 5680.** Subinternship in Plastic Surgery. The student works with the plastic surgery faculty and residents on the plastic surgery service at Vanderbilt University Hospital, participating in the diagnosis and management of patients, with a wide variety of reconstructive and aesthetic problems. This includes surgery of the hand, the breast and trunk, the head and neck, and the lower extremity. Patients range from pediatric to geriatric age groups and problems vary from congenital to acquired including deformity from neoplasm, burns, and trauma. Prerequisite: Surgery 5020. Fourth year.

**SURG 5690.** Subinternship in Kidney/Pancreas Transplantation. This course is offered by the Department of General Surgery. Students will work with the resident and full-time staff on the transplantation service. Experience will be provided in pre-operative, operative, and post-operative management of patients who have had a kidney and/or pancreas allograft. The student will have an opportunity to study methods of tissue typing, organ preservation, and immunosuppression. Ward rounds daily. Prerequisite: Surgery 5020. Fourth year.

**SURG 5700. Clerkship in Oral Surgery.** Senior medical students will work with the residents and staff in the diagnosis and management of oral surgical problems. There will be participation in the management of a wide range of surgical problems, including temporomandibular joint disease, facial trauma, growth abnormalities, and benign lesions. There will also be experience in minor surgical procedures of the mouth, for example, extraction of teeth. Prerequisite: Surgery 5020. Fourth year.

**SURG 5850.** Subinternship in Trauma. The Vanderbilt University Trauma Center provides an integrated approach to the multiply injured patient. The student will be introduced to the three basic components of trauma care: pre-hospital care, hospital care, and rehabilitation. The pre-hospital care component includes exposure to the Life Flight program, the Metro Ambulance Service, and the initial resuscitation and assessment in the Emergency Room. The hospital care component of the elective allows

active participation on the inpatient trauma service, including the assessment of difficult problems in intensive care medicine and rehabilitation. Students are expected to become proficient in a wide variety of bedside procedures in a supervised setting. An essay examination is given at the end of the rotation. Prerequisite: Surgery 5020. Faculty approval required. Fourth year.

**SURG 5930.** Preparation for the Surgical Internship. The goal of this course is to arm fourth year medical students entering general surgery or 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. Fourth year. February.

**SURG 5980.** Subinternship in Pediatric Urology. The student will work with full-time faculty and the urology resident staff in the day-to-day care of patients on the pediatric urology service. This clerkship will provide an in-depth experience in the care and treatment of both in-hospital and outpatient urological problems. Participation in the clerkship will also involve attendance at the various department-wide conferences held during the week. This clerkship is intended for those considering a urological residency or considering a residency in pediatrics. Prerequisite: Surgery 5020. Fourth year.

**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 6150. Special Research Study—Vanderbilt.** Each student arranges an independent study with a mentor and completes a period of research work. Approval required.

**SURG 6200.** Special Study—Pre-Clinical. Each student arranges an independent study with a mentor and completes a period of clinical or research work. Approval required.

**SURG 7100.** Special Clinical Study—Non-VU. 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.

## Clinical Investigation

Courses leading to the Master of Science in Clinical Investigation

MSCI 5000. Drug and Device Development. This seminar-style course is designed to provide an overview of the drug and device development process. We will cover issues of drug discovery, pre-clinical drug development, Phase I through Phase IV human testing, device development, and the role of the FDA in regulatory affairs. First year. Summer. [3]

MSCI 5001. Grant Writing I (Also listed as PUBH 5517). Principles of scientific written and oral communication, with a focus on grant writing will be discussed. The principles of scientific grant writing will include how to write the background and significance, previous work, and methods sections. Students will review grants submitted to public health service study sections, participate in a mock study section, and prepare a sample grant application. Enrollment is limited. First year. Summer. [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 peer-reviewed medical journals. Since candidates in the M.S.C.I. program are expected to complete their master's theses based on their research projects in the spring of year two, this course is scheduled prior to this deadline to assist students in writing their

theses. Teaching will consist of demonstrations and discussions of how to improve the writing quality using each student's thesis-in-progress as an example. Each student will be expected to write and revise his or her master's thesis as course work. No additional written assignments will be required. Second year. Spring. [2]

MSCI 5003. Molecular Medicine. The Molecular Medicine course will provide an overview of basic cellular and molecular processes to acquaint physicians who have been engaged in clinical training with recent advances in these areas. Each module of the course will consist of didactic lectures addressing a fundamental process followed by clinical illustrations to demonstrate the relevance of molecular biology to clinical medicine and investigation. In general, the fundamental didactic lectures will be delivered by basic science faculty and the clinical illustrations will be presented in a case-oriented fashion by a member of the Department of Medicine or other clinical department. First year. Spring. [4]

**MSCI 5005.** Case Studies in Clinical Investigation I. First year M.S.C.I. students will present their project plans for class discussions. The format will be in a studio design. Students will be presenting their M.S.C.I. projects in the presence of three to four experts selected from VU faculty. It is anticipated that the studio will take place prior to submission of the project for IRB or CTSA application (if applicable). The students are expected to initiate the studio process as soon as they are accepted in the program. This course is graded pass/fail. First year. [1]

MSCI 5009. Biostatistics I. This course will teach modern biostatistical skills. Students will use statistical software to learn data analysis methods using actual clinical research data sets. Students will also learn about statistical power and sample size calculations using the software nQuery Advisor. An emphasis will be placed on performing statistical analyses and interpreting output. Commonly used statistical methods will be explained as well as the techniques that experienced biostatisticians use to analyze data. All students will be encouraged to bring a data film from their M.S.C.I. project to class to stress hands-on learning with clinical research data. First year. Fall. [4]

MSCI 5015. Biostatistics II. The objectives of this course include fundamental biostatistical concepts related to multivariable analyses in existence of confounding and effect modification. Topics include Student's t-test, one-way ANOVA, linear, binary logistic, proportional odds logistic, and Cox proportional-hazard regressions with emphasis in checking model assumptions. Basic concepts on repeated measures analysis including a mixed-effect and GEE regression models. Proper strategies for developing reliable multivariable models. Proper strategies for developing reliable multivariable models in prognostic-diagnostic research, randomized controlled trial, and observational study for causation. Prerequisite: MSCI 5009 and MSCI 5030. First year. Spring. [4]

**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 Career Seminars.** Topics of discussion will include academic "rules of the road," time management, promotion/tenure issues, grants management, and overall program evaluation. Candidates will hone their scientific communication skills through an annual presentation at this forum. Fall, Spring. [1]

MSCI 5021. Master's Research I. Completion of a mentored research project is a required component of the M.S.C.I. program. The research must be patient-oriented and involve direct measurements on patient-derived samples or the use of investigational therapeutic or diagnostic techniques. This course is graded pass/fail. [1]

MSCI 5022. Master's Research II. Completion of a mentored research project is a required component of the M.S.C.I. program. The research must be patient-oriented and involve direct measurements on patient-derived samples or the use of investigational therapeutic or diagnostic techniques. This course is graded pass/fail. [1-3]

**MSCI 5023. Master's Research III.** Completion of a mentored research project is a required component of the M.S.C.I. program. The research must be patient-oriented and involve direct measurements on patient-

derived samples or the use of investigational therapeutic or diagnostic techniques. This course is graded pass/fail. [1-3]

**MSCI 5024. Case Studies in Clinical Investigation II.** This course is designed to simulate a thesis defense. Overall, second-year M.S.C.I. students are expected to give a presentation to the class on the progress of their selected M.S.C.I. project or their project completed during the program. The extent of the presentation will depend on the accomplishments made. If requested, a studio format can be utilized. This course is graded pass/fail. Second year. Spring. [1]

**MSCI 5025. Research Extension.** This course allows for an extension on the research project. [0]

MSCI 5028. Data Management. The objective of this elective course is to teach students the fundamentals of research data planning, collection, storage, dissemination and manipulation. Several software tools will be employed, but primary ideas should transcend individual applications (especially versions) and ultimately serve students by providing tools for use in data management for clinical investigation. Spring alternate even years. [2]

MSCI 5029. Research Ethics and systematic examination of the ethical concepts and standards of biomedical science and research integrity. Its aim is to provide trainees in the biomedical sciences and clinical research a framework in which to recognize, examine, resolve, and prevent ethical conflicts in their professional work. First year. Summer. [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. Design and data analysis for clinical trials in biomedical research. Primary topics include specification of objectives, ethical guidelines, randomization, blinding, design options, sample size determination and data analysis appropriate for non-standard designs such as crossover, nested, factorial and group allocation designs. Other topics include role of clinical trials in FDA drug approval process, meta-analysis and management of clinical trial data. Emphasis is on practical use of methods rather than formal statistical theory. Summer. [3]

**MSCI 5099.** Independent Study. Students may choose a topic for independent study. [1-5]

### Global Health

Courses leading to the Global Health Certificate

VIGH 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 and is offered to M.D. students as IGHM 5240. Fall. [3]

VIGH 5241. Foundational 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 (partnership-based) action are highlighted. The course is taught by an interdisciplinary faculty and external resource persons using didactic, interactive, and practical elements of

instruction. This course may be taken as credit toward the Global Health Certificate and is offered to M.D. students as IGHM 5241. Spring. [3]

VIGH 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 and is offered to M.D. students as IGHM 5242. Fall. [1]

VIGH 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 and is offered to M.D. students as IGHM 5244. Spring. [1]

VIGH 5246. Leadership Development in Global Health. This course is an introduction to leadership theory and practice, directed toward those who seek leadership positions in the area of global health. The course will draw on students' own experiences with leadership and seek to extend their capacities to effectively lead in organizations. The course seeks to explore dimensions and competencies of leaders, define the abilities and traits of effective leadership, and explore how students develop those requisite abilities. This course may be taken as credit toward the Global Health Certificate and is offered to M.D. students as IGHM 5246. Fall. [1]

VIGH 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 and is offered to M.D. students as IGHM 5249. Spring. [1]

VIGH 5252. Introduction to Quality Improvement. This course will introduce the concept and methodology of Quality Improvement (QI) science as it applies to health care delivery in the U.S. and in the developing world. The course is designed to give students the background to understand the role that QI plays in reducing medical errors, improving service efficiency and adding value in health care systems. Students will be given hands-on experience in QI by developing and implementing a personal improvement project over the course of the month. Students will develop an understanding of how to bring about change in health care systems by analysis of health care processes, how to develop pilot interventions, use data to evaluate changes, and empower individuals to be agents of improvement. This course may be taken to satisfy requirements for the Global Health Certificate and M.D. students may enroll in the course as IGHM 5252. Spring. [1]

VIGH 5254. One Health: Intersection of Animal, Environmental, and Human Health. The course objectives are to introduce students to the core concepts of One Health and to expose them to integrated transdisciplinary approaches to global health problems. The online course will use lectures and case studies to illustrate how human, animal, and environmental health are linked, and students will participate in activities to design creative, interdisciplinary interventions for a global health problem. Spring. [1]

# Health Professions Education

Courses leading to the Master of Health Professions Education

MHPE 5510. Introduction to Capstone Project. The capstone project serves as a demonstration of competency in the program. Proposal possibilities will ordinarily be completed in a cohort team and assigned from a list of approved projects solicited from health professions schools. The project will be developed in collaboration with a faculty mentor, who will serve to guide the student through the completion of the project during the spring semester, Year 2. Students will continue to meet with mentors throughout the program to sustain sufficient project progress. First year. Fall. [1]

MHPE 5511. Proseminar In Health Professions Education: Topics, Issues, and Educational Scholarship. This course is designed to introduce students to current issues facing health professions education in preparation for a topic for inquiry for the program capstone project, and as elaborated by the ideas of educational scholarship of Boyer and Glassic. First year. Fall. [2]

MHPE 5512. How People Learn: Learning Theories and Research. This course is a survey of selected theories and principles of learning and the research that informs them as they address the active engagement of students, their learning for deep understanding, the demonstration of their competence and our best practices of teaching that support learning. First year. Fall. [3-4]

MHPE 5513. Logic of Systematic Inquiry: introduction to Experimental and Quasi-experimental Designs. Students will focus on both experimental and quasi-experimental research methodologies and threats to valid conclusions from these designs. The course will also address the critical evaluation of reports, library research skills, and organizing an integrative review of existing theory and research. First year. Spring. [4]

MHPE 5514. Survey Design and Research. This is an introductory course on survey research methods, with an emphasis on surveys in organizations. The objective is to provide students with the knowledge and tools necessary to design survey tools, conduct survey research, and interpret survey results. First year. Spring. [2]

MHPE 5515. Principles of Assessment: Measurement Theory, Assessment Principles and Tools. Students will examine the comprehensiveness, validity, precision, feasibility, and educational considerations of select assessment methods of learners in health professions education; students will survey tools and their appropriate application to determining the outcomes of learning. Normative and mastery models of learning and implications for the quality of assessment tools under each model will be discussed. First year. Summer. [2]

MHPE 5516. Qualitative and Quantitative Analytic Methods. The focus of this course is on the basic tools of analysis from both quantitative and qualitative design perspectives. The course will include a critical analysis of commonly used quantitative methods, an introduction to qualitative methods, and mixed methodologies for combining these two often dissimilarly held approaches. First year. Summer. [4]

**MHPE 5520.** Instructional Design and Strategies for Learning. This course offers a critical examination of various instructional designs and strategies that give students the opportunity to learn and practice to achieve the results desired from instruction. Second year. Fall. [3]

MHPE 5521. Curriculum Development and Improvement: Continuous Quality Improvement. This course offers a systematic approach to developing courses, programs, and other curricula by starting with outcomes and impact desired and working backwards to specify results, learning activities, and resources required. Students will be introduced to the principles of sustained curricular improvement through a continuous quality improvement process. Second year. Fall. [3]

MHPE 5522. Leadership Theory and Behavior. This course provides an overview of the theories and best practices correlated to effective leadership. The major foci will be an examination of leadership competencies; customization of leadership strategies based on individual, team, and organization dynamics; and how leaders maximize personal and organizational effectiveness. Second year. Spring. [3]

MHPE 5523. Innovation and Leading Change. This course offers an examination of the role of leadership in the disruptive nature of innovation. Included will be vision building, strategies for managing barriers to change, engaging champions, and preventing change fatigue from derailing initiatives. Second year. Spring. [3]

**MHPE 5524. Topics in Health Professions Education Leadership.** Selected readings will be designed for the student to bring together the full spectrum of the program goals to reflect upon the ways in which leaders act as change agents within teams. Second year. Summer. [2]

MHPE 5525. Capstone Project. The Capstone Project offers an opportunity for students to address a substantial issue related to their professional work and to design and implement a scholarly approach toward its solution. The project must be of suitable scholarship that it will stand for critical analysis to a local, regional, or national peer group. All students are required to present their work in a Capstone Project Day to complete their degree requirements. Second year. Summer. [4]

MHPE 5530. Independent Study: Special Topics in Health Professions Education. This is a required course to give students an opportunity to gain further knowledge and skills in a focused area that are not captured by the core program threads. The study will be individually crafted under the guidance of an advisor to offer a wide range of possible experiences, with the approval of the program director. [2]

MHPE 5531. Independent Study: Curriculum Development, Instructional Design and Assessment Topics in HPE. This course gives students an opportunity to gain further knowledge and skills through a focus study of curriculum, instruction and assessment issues in health professions education. The study will be individually crafted under the guidance of an advisor to offer a wide range of possible experiences, with the approval of the program director.

MHPE 5532. Independent Study: Leadership as Change Agent Topics in HPE. This course gives students an opportunity to gain further knowledge and skills through a focus study of issues related to leading change in health professions education. The study will be individually crafted under the guidance of an advisor to offer a wide range of possible experiences, with the approval of the program director. [2]

MHPE 5533. Independent Study: Scholarly Topics in Health Professions Education. This course gives students an opportunity to gain further knowledge and skills through a focused study in developing a researchable question that contributes to our best practices in health professions education. The study will be individually crafted under the guidance of an advisor to offer a wide range of possible experiences, with the approval of the program director. [2]

#### Audiology

Courses leading to the Doctor of Audiology

**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 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. [3]

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 5327. Hearing Loss and Speech Understanding.** This course examines various factors that may affect the speech understanding of persons with hearing loss. The contribution to the unaided and aided speech understanding of persons with hearing loss of (1) subject factors, such as degree of hearing loss, and deficits in frequency and temporal resolution, and (2) environmental factors, such as the level and type of background noise, reverberation, and talker characteristics, will be examined. Methods for predicting speech understanding will also be discussed. Spring. [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]

**AUD. 5333.** Microbiology and Pharmacology for Audiology. An examination of the microbial etiology and pathogenesis of acute otitis media and those microbial/host/environmental risk factors associated with infection, the primary mechanisms of antimicrobial resistance commonly encountered in middle ear infections, and how this process impacts upon the therapeutic selection of an antimicrobial agent. The course will identify the potential role of biofilm formation in the middle ear as a potent virulence factor for recurrent disease. Spring. [3]

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.** 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:**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. 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 system impairments. A final module will focus on how results of the 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. III.** Design 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. 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 [3], Spring [3], Summer [1]. [1-3]

**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 5362. Sign Language for Audiologists.** This introductory course includes basic communication skills of American Sign Language (e.g., non-manual markers, finger spelling, numbers, basic vocabulary, classifiers, ASL linguistic structure), the sign system continuum, culture implications, and media resources available. Spring [2], Summer [1].

**AUD 5363. Hearing and Aging.** A survey of major concepts in gerontology, including demographics, psychosocial aspects of aging, biology of aging, and clinical conditions of the older adult. Physiological changes within the aging auditory system, and clinical issues in audiological assessment and intervention with older hearing-impaired patients. Fall. [3]

**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 5374. Overview of Intraoperative Monitoring.** A basic introduction to intraoperative neurophysiologic monitoring, including observation time in the operating room. May Session [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. The grade for this class will include clinical performance and attendance. Fall, Spring [3]

**AUD 5584. Independent Practicum.** This course allows students to continue work toward degree requirements. Fall, Spring, Summer.

**AUD 5586. Summer Practicum.** This course includes attendance at weekly case conferences where clinical case studies will be presented. The grade for this class will include clinical performance and attendance. Summer. [3]

#### Education of the Deaf

Courses leading to the Master of Education of the Deaf

MDE 5207. American Sign Language. This intermediate course in American Sign Language includes a more in depth look at the linguistics of ASL (e.g., morphology, phonology, syntax, and semantics) and current readings and research in the field. Prerequisite: 3 credit ASL/Sign Language Class. Offered as needed. Spring. [3]

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, and 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. [1-3]

**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 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. [2]

**MDE 5322.** Children with Hearing Loss and 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 three-week, 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. Teaching Children with Hearing Loss to Listen and Speak: Assessment. 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 the fall, the focus will be early childhood development. The focus of this course is assessment in early childhood. Spring. [2]

MDE 5394. Teaching Children with Hearing Loss to Listen and Speak: Intervention. 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 the fall, the focus will be early childhood development. The focus of this course is intervention. 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. 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 5206. Anatomy and Physiology of Speech and Hearing Mechanisms.** The processes of speech production, acoustics, and perception. Neuroanatomy, anatomy, physiology, acoustics, and acoustic correlates of sound features. Not intended for undergraduates and graduate students outside the Department of Hearing and Speech Sciences. Spring. [3]
- **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 5290.** 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 5291. Child Language Impairments II: Assessment. This course is the second in a three-course sequence on child language impairment. 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, criterion-referenced instruments, research-validated experimental measures, and progress monitoring tools. In addition, students will gain knowledge and skills in collaborating with families and teachers on assessment of children's linguistic abilities. Students will 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. Fall. [2]
- SLP 5292. 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 inter-

- vention. The lab component of the course focuses on the implementation of specific intervention strategies, procedures, and programs. Spring. [2]
- **SLP 5300. Neurology of Speech and Language.** The structure and function of the nervous system, with emphasis on the neural mechanisms of speech and language. Neurologic conditions producing speech and language disorders are surveyed. Fall. [3]
- **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 course work 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. Spring. [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 5329.** Augmentative and Alternative Communication Lab. This lab in augmentative and alternative communication (AAC) is designed to complement the in-class portion of the course. It will entail hands-on experiences/assignments that relate to real world AAC applications. This will include working on low- and high-tech AAC options with a view to clinical application in various populations.

**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 lowand 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 5348. Introduction to Audiology.** An introduction to current practice, issues, and trends in audiology. The following topics are discussed: acoustics, anatomy and physiology of the auditory system, common pathologies of the auditory system, assessment of auditory function, audiogram interpretation, early identification and intervention, amplification and rehabilitation. This is an introductory course and is designed for students without previous course work in this area of study. Fall. [3]
- **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 5369. Master's Thesis Research.** This course is graded pass/fail. Fall, Spring, Summer. [0]
- **SLP 5378.** Advanced Voice Instrumentation and Lab. This advanced seminar will discuss the theoretical foundations and practical applications of instrumentation and technology in the assessment and treatment of voice and voice disorders. The focus will be on the development of advanced skills and training in the use of instrumentation and technology in research and clinical practice. Summer. This course is graded pass/fail. [1]
- **SLP 5388. Independent Study/Readings in Speech Pathology.** Fall, Spring, Summer. [Variable 1-3]
- **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 5583. Practicum and Clinical Case Conference.** This course includes attendance at weekly case conferences where clinical case studies will be presented. The grade for this class will include clinical performance and attendance. 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]

### Laboratory Investigation

Courses leading to the Master of Laboratory Investigation

- **MLI 1010. Lab Theory I.** This is a lecture and hands-on course designed for M.L.I. students and covers methods for the production, detection, molecular biological and immunological characterization, purification, and conjugation (e.g., to beads, biotin, dyes, enzymes, etc.) of recombinant proteins and antibodies for research use. Fall, Spring, Summer. [4]
- **MLI 1011.** Lab Theory II. This is a lecture and hands on course designed for M.L.I. students and covers methods for the production, detection, immunological characterization, purification, conjugation (e.g., to beads, biotin, dyes, enzymes, etc.), and assay development of hybridoma monoclonal antibodies for research use. Fall, Spring, Summer. [4]
- **MLI 1020. Bioregulation I.** This course will cover the fundamental aspects of the utilization of genetic material from DNA to RNA to protein. Fall, Spring, Summer. [0-6]
- **MLI 1025. Bioregulation II.** This course will cover the fundamental aspects of cell-cell communication and information flow through multicellular organs and the overall regulation of these processes. Fall, Spring, Summer. [0-6]
- **MLI 1030. Methods of Research Techniques.** This course is designed for M.L.I. students. Fall. [1]
- **MLI 1040.** Responsible Conduct in Research. 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. [1]
- **MLI 2010. Lab Management.** This course is designed for M.L.I. students and covers university, departmental, and laboratory organization, team building, budget management, problem resolution, record keeping, notebook and electronic data base management, IACUC and IRB protocol writing, etc. Spring. [1-4]
- **MLI 2200. Foundations in Introductory Biochemistry.** An introductory course covering fundamental concepts in biological chemistry. Topics include amino acids, proteins, enzymology, and basic carbohydrate and fat metabolism. MLI students only. Summer. [2]
- **MLI 3010. Thesis Research and Defense.** 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. [0-6].
- **MLI 3020. Research Project.** 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 3025. Independent Study. This course allows a student to pursue individualized professional research or training goals. Fall, Spring, Summer. [0-4]
- **MLI 3030. Training and Techniques I.** This course is designed for students with a strong academic/research background who are strengthen-

ing their laboratory techniques. Students will conduct laboratory research on a project designed by a highly skilled faculty/research scientist preceptor. Includes technical instruction, critical data analysis, experimental design, and literature review. Fall, Spring, Summer. [0-6]

**MLI 3031. Training and Technique Modules: Microscopy.** Eight-week modules conducting laboratory research on a project designed by a faculty preceptor. Includes technical instruction, critical data analysis, experimental design, and literature review. Summer. [0-3]

**MLI 3032. Training and Technique Modules: RT-PCR.** Eight-week modules conducting laboratory research on a project designed by a faculty preceptor. Includes technical instruction, critical data analysis, experimental design, and literature review. Spring. [0-3]

**MLI 3035. Training and Techniques II.** This course is designed for students with a strong academic/research background who are strengthening their laboratory techniques. Students will conduct laboratory research on a project designed by a highly skilled faculty/research scientist preceptor. Includes technical instruction, critical data analysis, experimental design, and literature review. Fall, Spring, Summer. [0-6]

MLI 3040. Training and Technique Modules: Fluorescence Activated Cell Sorting. Students will learn basic to advanced techniques for using the most advanced flow cytometers in use today. This course will include some history of the technology as well as the Einsteinian principles that are the foundation of this technology while practically applying the lessons they learn first-hand on instruments in the Flow Cytometry Core lab. There will be two classes per week for eight weeks culminating in the challenge of applying what students have learned to diagnose and repair a non-functional cytometer. Spring. [0-2]

MLI 3041. Training and Technique Module: Immunohistochemistry and escence. Immunohistochemistry (IHC) and immunofluorescence (IF) is a lecture and hands-on techniques course designed to teach students the principles and procedures needed to conjugate antibodies to biotin, dyes and enzymes and to use conjugated antibodies to detect antigens present in tissue samples at the microscopic level. [2]

## 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 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. Spring. [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. [2]

**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 introduction to epidemiology 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. Enrollment is limited. Fall. [4]

**PUBH. 5502.** Biostatistics I. 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, nonparametric 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. Enrollment is limited. Fall. [4]

**PUBH 5508. Epidemiology II: Non-randomized Study Design.** The design of non-randomized studies, including factors that are important in design selection. The design of cohort studies, including rationale for use of the cohort study, prospective and retrospective cohort studies, assembly and follow-up 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, including rationale for use, conditions necessary for validity of the case-control study, selection of controls, sources of bias in case-control studies, and multivariate analysis. The ecological study, including when to use and when to avoid. Designs to usually avoid: cross-sectional, case-series, and exposed-subject designs. The course includes didactic lectures and critical reading of important epidemiologic studies from the current medical literature. The latter encompasses discussion of the articles in small groups and structured presentation to

the class. Prerequisite: Epidemiology I, Biostatistics II, Clinical Trials, or approval of instructor. Enrollment is limited to twenty-four students due to space restrictions, with priority given to M.P.H. and M.S.C.I. students. Spring. [4]

**PUBH 5509.** Biostatistics II. Modern multivariate analyses, based on the concept of generalized linear models. Includes linear, logistic, and Poisson regression, survival analysis, fixed effects analysis of variance, and repeated measures analysis of variance. Course emphasizes underlying similarity of these methods, choice of the right method for specific problems, common aspects of model construction, and the testing of model assumptions through influence and residual analyses. Prerequisite: Biostatistics I or consent of the course director. Enrollment is limited. Spring. [4]

**PUBH 5512. Clinical Economics and Decision Analysis.** This course will provide an overview of qualitative and quantitative decision making with a dominant focus on quantitative techniques for decision making, 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. Students may substitute this elective course for a portion of the dissertation research credit. Offered every other year. Spring. [3]

**PUBH 5514.** Social and Behavioral Science for Public Health. The course will address two core areas in health behavior research: (1) the measurement of knowledge, attributes, attitudes, and behaviors that are relevant to health behavior research, with a focus on scale development and (2) the dispositional and situational variables that underlie current theories of behavior and behavior change, with current applications. Fall. [3]

**PUBH 5516. Environmental Health.** This course will review the three key public health functions of assessment, policy development, and assurance in relationship to environmental health issues. Topics covered will include public health surveillance activities including bioterrorism issues, food safety, air pollution, and genetics and public health. Students will learn where to obtain publicly available population data on health-related events from a variety of surveillance activities and special surveys. Fall. [3]

**PUBH 5517. Grant Writing and**Oscientific written and oral communication with a focus on grant writing will be discussed. The principles of scientific grant writing will include how to write the background and significance, previous work, and methods sections. Students will review grants submitted to public health service study sections, participate in a mock study section, and prepare a sample grant application. Enrollment limited to matriculates in the M.P.H. or M.S.C.I. programs. M.P.H. matriculates must have completed Epidemiology 2. Enrollment is limited. Summer. [1]

**PUBH 5518. Research Ethics.** 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). Instructor approval required. This course is graded pass/fail. Summer. [1]

**PUBH 5519. MPH Thesis Seminar.** A research seminar at which each student presents the results of thesis research. This will be organized into a one-hour presentation with a background and significance, methods, results, and public health/research Implications covered. A total of four seminars are scheduled each year. Each student schedules a presentation at one of these (four maximum) on a first-come, first-served basis. Students are encouraged to attend all of the others and must attend at least one. Students must obtain approval of their thesis committee prior to presenting. This course is graded pass/fail. Spring. [1]

**PUBH 5526. MPH Thesis Proposal Development.** This course focuses on development of the individual student's project including identification of a key global health question and design of a suitable project to address the question. Each student will present the background, methods, and

limitations of the proposed project design in class. Enrollment is limited to students in the M.P.H. program. Fall. [1]

**PUBH 5527. MPH Thesis Proposal Development.** 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. Each student will complete the research protocol for the student's master's thesis as a part of the course. Enrollment is limited to students in the M.P.H. program. Summer. [1]

PUBH 5528. MPH Project Extension. Fall, Spring, Summer. [0]

**PUBH 5535. Global Health Practicum.** Each student will participate in a global public health practicum which will provide students with opportunities to develop practical skills and competencies in public health practice settings. This course is graded pass/fail. Summer, Fall, Spring. [4-8]

**PUBH 5535. Global Health Practicum.** Each student will participate in a global public health practicum which will provide students with opportunities to develop practical skills and competencies in publich health practice settings. This course is graded pass/fail. Summer, Fall, Spring. [4-8]

**PUBH 5536. Public Health Practicum.** Each student will participate in a public health practicum that will provide students with opportunities to develop practical skills and competencies in public health practice settings. This course is graded pass/fail. Spring. [4-6]

**PUBH 5537. Health Services Administration: Health Care Systems.** This course provides an overview of the organization, financing, and delivery of health care. The course will review the complex inter-relationships among key stakeholders in the industry, how this structure has evolved over time, and how these system-wide challenges are likely to affect health care policy in the future. Prerequisite: Epidemiology II, Biostatistics II or approval of instructor. [1]

**PUBH 5538. Health Services Administration: Program and Policy Evaluation.** 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. Class will include didactic lectures and small group critical reading/presentation of current program/policy evaluations published in leading medical journals. Prerequisite: Epidemiology II, Biostatistics II or approval of instructor. Offered every other year. Spring. [2]

**PUBH 5539.** Health Services Administration: Public Health Delivery. This course focuses on the organization, financing, and delivery of public health systems. Topics will include organization of public health systems, strategies for financing public health interventions, public health leadership and communications, emergency management, the interface between law, government, and public health, the delivery of public health in international settings, and cultural competency in public health systems. The course will include lectures, case studies of public health systems, and small group discussions. Fall. [1]

**PUBH 5540.** Health Services Administration: Leadership and Management in Global Health. The 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. Spring. [3]

**PUBH 5541. Foundational 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 (partnership-based) action are highlighted. The course is taught by an interdisciplinary faculty and external resource persons using didactic, interactive, and practical elements of instruction. This course may be taken as credit toward the Global Health Certificate and is offered to M.D. students as IGHM 5241. Spring. [3]

**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 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 and is offered to M.D. students as IGHM 5240. Spring. [3]

**PUBH 5543.** 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. [1]

**PUBH 5544. 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 and for M.D. students as IGHM 5244. Spring, [1]

**PUBH 5546.** Leadership Development in Global Health. This course is an introduction to leadership theory and practice, directed toward those who seek leadership positions in the area of global health. The course will draw on students' own experiences with leadership and seek to extend their capacities to effectively lead in organizations. The course seeks to explore dimensions and competencies of leaders, define the abilities and traits of effective leadership and explore how students develop those requisite abilities. This course may be taken as credit toward the Global Health Certificate. First and second year. [1]

**PUBH 5548. Medical Anthropology.** This course provides a framework for students to investigate and learn about the study of pain, illness, suffering, and healing in cultures around the world. This course is designed to introduce students to a broad range of medical anthropology topics, theoretical approaches and research techniques by examining case studies on chronic illness, sorcery and traditional healing, modern pandemics, as well as treatment and illness expectations. Within these discussions, our focus will be comparative, investigating illness, misfortune, and healing in a number of societies from Mozambique, Uganda, South Africa, France, the United States, and Japan. Students will develop an appreciation for the culturally specific nature of illness, allowing them to better understand and treat patients from diverse cultural backgrounds. This course may be taken as credit toward the Global Health Certificate and is offered to M.D. students as IGHM 5248. Fall. [1]

**PUBH 5549. 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 and is offered to M.D. students as IGHM 5249. [1]

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**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 created and shaped global health policy both in the U.S. and among the G8 nations from 2000–2011. This course may be taken as credit toward the Global Health Certificate and is offered to M.D. students as IGHM 5250. Spring. [1]

**PUBH 5554.** One Health: The Intersection of Animal, Environmental, and Human Health. The course objectives are to introduce students to the core concepts of One Health—the intersection of animal, environmental, and human health, and to expose them to integrated trans-disciplinary approaches to global health problems. The online course will use lectures and case studies to illustrate how human, animal, and environmental health are linked, and students will participate in activities to design creative, interdisciplinary interventions for a global health problem. [1]

**PUBH 5555. Global Health Nicaragua.** This twelve-week course is designed to expose medical students to the basic health care systems of Nicaragua centered around a one-week trip to the country. Students will gain a basic understanding of the health care disparities between Nicaragua and Nashville; understand the role of a visiting health care provider in global health stewardship; and understand the role of DM, HTN, and nutrition among the Nicaraguan people. Students will work to educate Nicaraguan patients in diabetes, nutrition, and cardiovascular health, and will educate the Vanderbilt community through a poster session upon their return. The class will be composed of didactic and small group casebased learning, several small-group project designs, journal club, and clinic observation, culminating in a poster session. Pre- or corequisite: Basic knowledge of Spanish or the Medical Spanish elective. This course may be taken as credit toward the Global Health Certificate and is offered to M.D. students as IGHM 5255. [1]

**PUBH 5556.** Laboratory Technologies in Low-Resource Settings. Core laboratory principles, technologies, and applications used in the delivery of care and the performance of clinical research in resource-limited settings. Strengths, limitations, and appropriate use of laboratory technologies in the changing landscape of international research and clinical care. [3]

**PUBH 5599. MPH Thesis Research.** The primary objective is completion of the thesis project. The student will coordinate dissertation research activities with the thesis committee. Pass/fail class. [1-7]

# **Faculty**

## Anesthesiology

CHAIR Warren S. Sandberg

PROFESSORS EMERITI M. Lawrence Berman, John J. Franks, Bradley E. Smith

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## Index

Academic policies 40, 57 Academic program 40 Accreditation, university 17 Activities and recreation fees 61, 67 Activities, extracurricular 24, 41

Address change 18

Administration, Medical Center 8 Administration, School of Medicine 10

Administration, university 6 Admission, School of Medicine 33

Advisers 31, 42 Affiliated facilities 16 Alpha Omega Alpha 59 Alternative transportation 22 Anatomy courses 69 Anesthesiology courses 69 Annual security report 18, 22 Appeals, dismissal 55

Application procedure 33 Athletic facilities 24 Attendance policy 40 Au.D. 36, 55, 67

Audiology courses 102 Audiology, Doctor of 36, 55, 67

Awards 59

Behavior, standards of 28

Better Health, Vanderbilt Center for 15

Bicycle registration 22 Bill Wilkerson Center 15 Biochemistry courses 69

Biomedical Informatics courses 70

Black Cultural Center, Bishop Joseph Johnson 22 Board of Trust, Medical Center Affairs Committee 7

Board of Trust, university 5 By laws, honor constitution 27

Calendar 4

Campus Security Report 18, 22 Cancer Biology courses 70 Cancer Center, Vanderbilt-Ingram 13

Career Center—See Center for Student Professional Development

Cell and Developmental Biology courses 70
Center for Student Professional Development 20

Change of address 18 Chaplain 23

Child and Family Center 21
Child Care Center 21
Children's Hospital 13
Class day awards 59
Clinic, The Vanderbilt 13
Clinical continuity experience 50
Clinical investigation courses 100

Clinician assessments of student performance 42

College Colloquium 31 Colleges, The 30, 43 Commencement 43, 52, 58 Committees, university 8

Committees, standing, School of Medicine 10

Commodore Card 18
Competencies for learners 29
Computer resources (ITS) 16
Confidentiality of student records 19
Continuing medical education 31
Core clinical curriculum 48, 51

Counseling services 20 Courses of study 69 Crime alerts 22

Dayani Center for Health and Wellness, Vanderbilt 15

Degree and promotions requirements, doctor of medicine 44, 46, 48, 50

Degrees offered, university 16 Diabetes Center, Vanderbilt 14 Diagnostic radiology courses 107

Dining services 18 Directory listings 19

Disabilities, services for students with 21

Disability insurance 61

Dismissal 54

Doctor of Audiology (Au.D.) 36, 55, 67 Doctor of Medical Physics (D.M.P.) 37, 57, 67

Doctor of Medicine 33, 40 Dual-degree programs 34, 35 Duty hours, medical student 41

Eating on campus 18 Education records 19

Educational and assistance programs, police department 22

Education of the deaf courses 104
Emergency Medicine courses 70
Emergency phones 22

Entrance recommendations 33
Entrance requirements 33

Equal Opportunity, Affirmative Action, and Disability Services (EAD) 2, 21

Equity in Athletics Disclosure Act Report 19

Escort service (Vandy Vans) 22 Eskind Biomedical Library 16

Executive faculty, School of Medicine 10

Expectations for conduct 42

Experiential Learning and Assessment, Center for (CELA) 31

Extracurricular activities 24, 41 Extracurricular work 41

Facilities of the Medical Center 13

Faculty 111 Fees 61, 67 FERPA 19

Financial assistance 18, 35, 62, 68 Financial clearance 61, 68 Financial information 18, 35, 61, 67 Founder's Medal 59

Frist Nursing Informatics Center 15 Frist, Patricia Champion, Hall 15

Global Health Certificate 78, 101 Global health courses 78, 101 Godchaux, Mary Ragland, Hall 14 Grading and promotions, other degrees 57 Grading policy, doctor of medicine 41

Grading scales 41

Graduate Development Network 22 Graduate medical education 31

Graduate programs in hearing and speech sciences 36, 55

Graduate programs in medical physics 37, 57, 67

Graduate Student Council 18

Graduation rates 17

Grievances, student, concerning grades 42

Health center, student 20

Health professions education courses 102

Hearing and Speech Sciences 36, 55, 56, 67 Heart and Vascular Institute, Vanderbilt 15

History, School of Medicine 32

History, university 16

Honor code 26

Honor Council, Constitution 26

Honor system 26

Honors and awards 59

Hospital, Monroe Carell Jr. Children's 13

Hospital, Psychiatric 13

Hospital, Vanderbilt Stallworth Rehabilitation 13

Hospital, Vanderbilt University 13 Hospitalization insurance 21, 62

Housing 18

Human Development, Vanderbilt Kennedy Center for Research on 14

Identification card (Commodore Card) 18

Immunization requirements 20
Information Technology Services 16

Insurance, disability 61

Insurance, family coverage 21 Insurance, hospitalization 21, 62

Insurance, international students 21, 61, 62

Insurance, liability 61

Interdisciplinary studies courses 70

International Student and Scholar Services 23

International students 21, 23, 39

Jewish Life, Schulman Center for 23

Johnson, Bishop Joseph, Black Cultural Center 22

## Kennedy Center 14

Laboratory investigation courses 106

Late payment of fees 61, 68

Learning community 48

LGBTQI Life, Office of 23 Liability insurance for students 61

Library, Annette and Irwin Eskind Biomedical (EBL) 16

Library, Jean and Alexander Heard 15

Licensing examination 40

Life at Vanderbilt 18

Light, Rudolph A., Hall 14, 32

Longitudinal requirements 48, 50

Master of Education of the Deaf (M.D.E.) 36, 55, 56, 67

Master of Health Professions Education (M.H.P.E.) 38, 56, 67

Master of Laboratory Investigation (M.L.I.) 38, 56, 67

Master of Public Health (M.P.H.) 38, 56, 67

Master of Science in Clinical Investigation (M.S.C.I.) 38, 56, 67

Master of Science in Medical Physics (M.S.M.P.) 37, 57, 67

Master of Science (Speech-Language Pathology) (S.L.P.) 37, 55, 67

M.D./J.D. 35

M.D./M.A. in Medicine, Health, and Society 36

M.D./MBA 36

M.D./M.Div. 35

M.D./M.Ed. 35

M.D./M.P.H. 36

M.D./M.S. in Biomedical Engineering 35

M.D./M.S. in Biomedical Informatics 35

M.D./M.S. in Computer Science 35

M.D./M.T.S. 35

M.D./Ph.D. 34

M.D.E. 36, 55, 56, 67

Medical Center Affairs Committee 7

Medical Center North 14

Medical Center Overview 13

Medical College Admission Test 33

Medical education 25

Medical education and administration courses 79

Medical licensing examination 40

Medical physics courses 107

Medical Research Building III 14 Medical Research Building IV 14

Medical Research Building, Ann and Roscoe Robinson 14

Medical Research Building, Frances Preston 14

Medical scientist scholarship programs 35

Medical Scientist Training Program (MSTP) 34

Medical student duty hours 41

Medical student performance evaluations 43

Medicine courses 79

Meharry medical students 39
Meharry-Vanderbilt Alliance 16

M.H.P.E. 38, 56, 67

Microbiology and immunology courses 85

Mission statement, School of Medicine 25

M.L.I. 38, 56, 67

Monroe Carell Jr. Children's Hospital at Vanderbilt 13

M.P.H. 38, 56, 67

M.S.C.I. 38, 56, 67

M.S.M.P. 37, 57, 67

Named and distinguished professors 123

Neurology courses 85

Nondiscrimination statement 2

Non-medical studies 86

Obstetrics and gynecology courses 86

Ophthalmology and visual sciences courses 87

Orthopaedic surgery and rehabilitation courses 88

Osteopathic students 39

Otolaryngology courses 88

Parking and vehicle registration 22

Pathology courses 90

Pediatric medicine courses 90

Pharmacology courses 93

Phase-specific requirements 48, 51

Physical medicine and rehabilitation courses 93

Physiology courses 94

Police Department, Vanderbilt University 21

Portfolio coaches 43

Post-residency clinical fellowships 31

Preston, Frances, Medical Research Building 14

Preventive medicine courses 93 Primary care petitions 44, 47

Probation 45, 47, 48, 50, 54 Professional doctoral degree in audiology 36, 55, 67

Professional liability insurance 61

Program in Interprofessional Learning 48

Progress and promotion, medical student 43, 45, 47, 49, 52

Psychiatric hospital 13 Psychiatry courses 94

Psychological and Counseling Center 20, 43

Public health courses 108

Radiation oncology courses 96

Radiology courses 95, 107

Recreation and sports 24

Recreation fee 61, 67 Refunds of tuition 61, 68

Registration for degrees other than M.D. 57

Rehabilitation hospital 13

Religious life 23

Research Development and Scholarship, Center for (CRDS) 14

Residency training 31

Robinson, Ann and Roscoe, Medical Research Building 14

Sarratt Student Center 24

Scholarships 62

Schulman Center for Jewish Life 23

Security alerts 22

Security, campus (Police Department) 21

Security reports 18, 22

Selection factors, entrance 33

Services to students 19

Sexual harassment 28

Single degree programs, other 36

S.L.P. 37, 55, 67

Special study credit petitions 44, 47

Speech-language pathology courses 105

Sports and recreation 24

Stallworth Rehabilitation Hospital 13

Standards of behavior 28

Standing committees, university 8

Standing committees, School of Medicine 10

Student actions 58

Student government 18

Student Health Center 20

Student health insurance 21, 62

Student health service fee 62, 67

Student Life Center 24

Student Professional Development, Center for 20

Student records, confidentiality of 19

Student Recreation Center 24

Student services 19

Student support programs 43, 47

Surgery courses 97

Surgical Sciences, Section of 97

Suspension 55

Therapeutic radiology courses 107

Transcripts 62, 67

Transfer students 34

Transplant Center 15

Tuition and fees 61, 67

University, general information 16, 18

United States Medical Licensing Examination 40

Vanderbilt Bill Wilkerson Center for Otolaryngology and

Communication Sciences 15

Vanderbilt Center for Better Health 15

Vanderbilt Child and Family Center 21

Vanderbilt Children's Hospital 13

Vanderbilt Clinic. The 13

Vanderbilt Dayani Center for Health and Wellness 15

Vanderbilt Diabetes Center 14

Vanderbilt directory listings 19

Vanderbilt Health 100 Oaks 14

Vanderbilt Health Williamson County 14

Vanderbilt Heart and Vascular Institute 15

Vanderbilt-Ingram Cancer Center 13

Vanderbilt Kennedy Center for Research on Human Development 14

Vanderbilt Program in Interprofessional Learning 48

Vanderbilt Psychiatric Hospital 13

Vanderbilt Stallworth Rehabilitation Hospital 13

Vanderbilt Transplant Center 15

Vanderbilt University Hospital 13

Vanderbilt University Police Department 21

Vandy Vans 22

Vehicle registration 22

Verification fee 62, 67

Veterans Administration Medical Center 16

Visiting medical students 39

Wilkerson, Bill, Center for Otolaryngology and Communication Sciences 15

Withdrawal from the School of Medicine 45, 48, 50

Archived 2015 cho Women's Center, Margaret Cuninggim 22