

# THE JOE R. AND TERESA LOZANO LONG SCHOOL OF MEDICINE

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## Brief History

In April 1959 Texas Governor Price Daniel signed House Bill 9 to establish the South Texas Medical School, the first component of the institution that would soon become the Health Science Center. In July 1968 the medical school, now known as the Joe R. and Teresa Lozano Long University of Texas School of Medicine at San Antonio (SOM), and the Bexar County Teaching Hospital, now known as University Hospital, were dedicated. Thirty-three medical students graduated with the Doctor of Medicine degree in the first medical school commencement in June 1970. Today there are nearly 900 medical students receiving their education at the Long SOM. In 1998 the Texas State Legislature authorized the creation of the Regional Academic Health Center (RAHC) in the Lower Rio Grande Valley, to be administered by the Long SOM, and in June 2002 the RAHC opened its doors to train third and fourth year medical students and residents. In 2013 the Texas State Legislature approved the expansion of the RAHC to become The University of Texas Rio Grande Valley SOM, which enrolled its first class of 50 first-year medical students in 2016.

## Mission Statement

The mission of the Long School of Medicine is to provide responsive and comprehensive education, research and service of the highest quality in order to meet the health-related needs of the citizens of Texas. In all aspects of fulfilling this mission, the Long School of Medicine is committed to fostering the broadest diversity and inclusion that ensures successful achievement of the institutional priorities to:

- Cultivate a pervasive, adaptive and respectful environment promoting diversity, inclusion, equity, professionalism, humanism and opportunity
- Provide exemplary medical education and training to a diverse body of health career professionals at all levels while fostering a commitment to scholarship, leadership and life-long learning across the educational continuum
- Build and sustain recognized leadership, and advance scholarship excellence across the biomedical and health-related research spectrum
- Deliver exemplary and compassionate health care to enhance every patient's quality of life
- Serve as a responsive resource to address community health needs whether local or global
- Attain health equity for the diverse patient population of South Texas

## Accreditation

The Long School of Medicine is fully accredited by the Liaison Committee on Medical Education (LCME), the nationally recognized body for the accreditation of medical education programs leading to the Doctor of Medicine degree in the United States.

## Confidentiality

The Long School of Medicine and Health Science Center will, to the extent possible, maintain the confidentiality of information in accordance with institutional, state, and federal regulations and requirements.

## Student Diversity

The SOM offers programs that create and sustain a spirit of diversity and inclusion that will further shape undergraduate medical education by fostering an environment of cultural competency, sensitivity and awareness. All student diversity efforts are fundamentally and comprehensively rooted in intellectual vitality and cross-cultural understanding that allow our student physicians to embrace and celebrate unique perspectives and life experiences that enrich students, faculty and staff in the SOM. Attention to cultural competence and cultural sensitivity throughout medical education both in and out of the classroom has the potential to alleviate or at least ameliorate systemic disparities in access to and quality of health care. All members of the SOM uphold the principles of the SOM Diversity Policy below.

## SOM Diversity Policy

*We believe that inclusion of all aspects of education and medicine encompassing diversity augment the richness of an academic community, and fosters intellectual excellence. Similarly, we believe that equity and inclusion are essential to building and sustaining leadership in academic medicine, and critical to advancing health and health care. Thus, it is the SOM's Diversity Policy that mandates/obligates all members of its communities to strive to:*

- Cultivate and ingrain throughout the academic environment a culture that respects equity and nurtures inclusion, allowing an active demonstration of diversity and pluralism as priorities in the fulfillment of each part of the SOM mission.
- Recognize and embrace a broadly defined spectrum of diversity including race, ethnicity, national origin, age, gender, culture, religion, physical abilities, veteran status, sexual orientation, gender identity, socioeconomic class, lifestyle preference, and political conviction. In consideration of our obligation to South Texas, we have a specific commitment to diversity as it relates to the recruitment and retention of Hispanics/Latinos and women in our faculty, staff and student communities.
- Uphold all Health Science Center EEO/AA and Human Resources' policies and practices for non-discrimination in recruitment and employment of any administrative and professional employee, classified staff and other employees, as well as trainees.
- Uphold all equity policies and practices for faculty recruitment and non-discrimination, and employ best practices for insuring broad outreach and inclusive searches.
- Uphold all equity policies and practices for faculty retention, professional development, advancement, and transitions across the faculty career 'life-span,' incorporating best practices to provide effective mentoring and a respectful, inclusive and supportive environment.
- Establish valid and reliable metrics to gauge diversity accomplishments; insure accuracy of required reports and other data management. Employ continuous quality improvement methods to ensure periodic reassessment of the SOM Diversity Policy and the SOM Diversity Action Plan (<http://som.uthscsa.edu/diversity/Diversity%20and%20Inclusion%20Strategic%20Plan%202014.pdf>).

**The SOM's inclusive culture also continues to seek, attract, retain, educate, train, develop and advance (although is not limited to) individuals with any of the following:**

- Life experience and/or professional expertise related to health inequities and/or healthcare disparities, including women's health and healthcare needs;
- A family of origin background inclusive of any of the following:
  - poverty
  - low educational attainment
  - rural or South Texas origin;
- Female gender;
- Military veteran status;
- Race/ethnicity of any groups historically underrepresented in medicine, including:
  - Hispanic or Latino, particularly of Cuban, Mexican or Puerto Rican origin, and of any race
  - Black or African American
  - American Indian or Alaskan Native
  - Native Hawaiian or Other Pacific Islander

### **General School of Medicine Diversity Definition**

Diversity at our institution is defined for faculty, staff and students as a broad range of intrinsic characteristics that include lifestyles, races/ethnicities, mental/physical abilities and characteristics, ages and genders that are encompassed within a community; all of these add value to our educational, research, clinical and community activities.

These are supplemented by our acknowledged extrinsic (acquired/developed) education attainment, and family status (figure below). This definition is supported by the SOM's mission to "cultivate a pervasive, adaptive and respectful environment promoting diversity, inclusion, equity, professionalism, humanism and opportunity". We believe that it is through the affirmation of one another's experiences that we become better suited to understand each other and to achieve a greater capacity to improve the human condition and yield the best health outcomes (<http://som.uthscsa.edu/aboutus.asp>). Diversity and inclusion have been tied to excellence in academic and research settings, thus we endeavor to provide culturally competent education, patient care, scientific discovery, and thoughtful community service in this context.

### **School Endorsement of AAMC Group on Diversity and Inclusion Definitions**

To complement our school-specific definition of diversity, we also ask our faculty and staff to recognize the operable and formal definitions of diversity, inclusion and health equity established through extensive collaboration and deliberation of the Association of American Medical Colleges' Group on Diversity and Inclusion (<https://www.aamc.org/members/gdi/>):

#### **Diversity**

Diversity as a core value embodies inclusiveness, mutual respect, and multiple perspectives and serves as a catalyst for change resulting in health equity. In this context, we are mindful of all aspects of human differences such as socioeconomic status, race, ethnicity, language, nationality, sex, gender identity, sexual orientation, religion, geography, disability and age.

#### **Inclusion**

Inclusion is a core element for successfully achieving diversity. Inclusion is achieved by nurturing the climate and culture of the institution through professional development, education, policy, and practice. The objective is creating a climate that fosters belonging, respect, and value for all and encourages engagement and connection throughout the institution and community.

#### **Health Equity**

Health equity is when everyone has the opportunity to attain their full health potential and no one is disadvantaged from achieving this potential because of their social position or other socially determined circumstance.

#### **ANES Courses**

##### **ANES 4000. Special Topic. 4 Credit Hours.**

This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

##### **ANES 4001. Clinical Anesthesiology. 4 Credit Hours.**

Students are required to participate in Anesthesiology at one of the general hospitals affiliated with the Health Science Center with supervised, graded responsibility for anesthetic management during all phases of the peri-operative period. Objectives are to develop skills for physical assessment, choice of anesthetic management, administration of anesthesia, airway maintenance, and basic life support of the anesthetized patient.

##### **ANES 4002. Critical Care. 4 Credit Hours.**

Students are required to participate in the adult surgical intensive care unit at Audie Murphy VA Hospital. Emphasis will be placed on the diagnosis and treatment of all aspects of acute respiratory failure, especially that occurring in the postoperative state, including post-cardiac surgery. The principles of pulmonary, renal, cardiac, and nutritional support will be discussed. The ethics of life support are also discussed.

##### **ANES 4003. Anesthesiology Research. 4 Credit Hours.**

Research experiences are in either the clinical or basic sciences. Clinical research includes developing an understanding of clinical study design, procedures involved in the clinical study and data analysis. Studies are carried out largely in the operating room environment. Basic research can include studies of vascular control, studies on anesthetic agent interactions with the central nervous and cardiovascular systems, CNS ischemic or traumatic injury, and electrophysiologic monitoring and drug kinetics across the human maternal/fetal placental barrier.

##### **ANES 4004. Obstetrical/Analgesia Mgmt. 4 Credit Hours.**

Participation in Obstetric Anesthesiology at University Hospital, teaching will emphasize practical care with the student taking an active part in the monitoring of and assisting in the anesthetic care of healthy or complicated women in labor, as well as those undergoing cesarean section. Students will have the opportunity to perform intubations, epidurals, and spinals. Management of GYN outpatient anesthesia will also be included. Emergency resuscitation for hypotension, convulsions, aspiration, and respiratory cardiac arrest may be reviewed as well as prophylactic measures for the prevention of these conditions.

**ANES 4005. Pain Management. 4 Credit Hours.**

Students participate in the University Center for Pain Medicine at University Hospital. Students participate in the management of chronic pain patients using a multi-disciplinary approach. Students will be exposed to areas of pain management that include operative vs. non-operative options for chronic pain patients and physical therapy and mobilization techniques. Student's responsibilities include evaluating new patient with a focused and detailed physical exam, seeing follow up patients for medication management, and managing patient pre, during, and post procedures. The student is required to become proficient in accurately evaluating back pain, neuropathies, radiculopathies, and pain diseases including regional complex pain syndromes. This rotation is designed for any student; especially those interested in primary care, anesthesiology, orthopedics, neurology, neurosurgery, or has an interest in learning how to deal with patients with chronic pain.

**ANES 4008. Cardiothoracic Anesthesia. 4 Credit Hours.**

Students will be involved in care of the cardiothoracic patients at University Hospital. Emphasis will be on anesthesia for patients with cardiovascular and thoracic disease, cardiopulmonary physiology and pharmacology, and invasive hemodynamic monitoring. Students will work directly with one of the cardiothoracic faculty in the Anesthesiology Department.

**ANES 4202. Clinical Anesthesiology-Harlingen. 4 Credit Hours.**

Senior students function as "interns" under private practice anesthesiologists who are clinical faculty at the Regional Academic Health Center. They perform preoperative anesthetic assessment on surgical patients in the outpatient clinics, in the ICUs, and on the general wards. They develop appreciation for medical conditions that affect choice of anesthetic agent. They have the opportunity to develop expertise in local, regional, and general anesthesia management. They have the opportunity to develop expertise in airway management. They have the opportunity to become knowledgeable in induction and maintenance anesthetic agents. They have the opportunity to develop expertise in intraoperative monitoring techniques of the anesthetized patient. They follow patients in the recovery room and develop appreciation for complications that may occur in the intra- and post-operative period. They present cases, attend all conferences, and take call as designated by the service. They mentor third-year medical students on the designated service.

**ANES 6081. Anesthesia Rotation. 1.5 Credit Hour.**

Students rotate through the operating room and peri-operative patient areas of the hospital to evaluate patients undergoing general anesthesia and deep conscious sedation. Primary purposes of this clinical rotation are to allow the student to become comfortable with airway management and patient monitoring.

**ANES 7000. Off Campus. 4 Credit Hours.**

All off campus rotations must be approved by the designated faculty member prior to the beginning of the rotation (at least one week before the course begins). Credit will not be given for any rotation that has not been approved in advance. Required paperwork includes: "Course Approval" form, a written letter or email for acceptance from the physician preceptor with the start and end dates of the course/rotation, and a course description of your learning objectives and responsibilities during the rotation. Forms must include a complete address and telephone number for the off campus location or residence address for the student while at the off campus site. Forms will not be approved after the rotation has already begun. Contact the department for assistance with enrolling in this course.

**BIOC Courses****BIOC 0003. Scientific Writing: Development and Defense of a Research Proposal. 2 Credit Hours.**

The course consists of writing a progress report describing research results during the last year. The course is required of all graduate students beginning the first semester after selection of a supervising professor.

**BIOC 4000. Special Topic. 4 Credit Hours.**

This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

**BIOC 4001. Biochemistry Research. 4 Credit Hours.**

This course is an opportunity to work in close collaboration with a member of the department on a problem in research of mutual interest. A sincere interest to acquire research experience or techniques, but no formal research training, is required.

**BIOC 5013. Biochemistry. 3.5 Credit Hours.**

Primarily lectures and conferences, this course is designed as a survey course for dental students. On a limited basis, a small number of graduate students may be accommodated. Content deals with the chemistry and metabolism of carbohydrates, amino acids, lipids, proteins, and nucleic acids. Special topics relating to the biochemistry of the oral cavity will be presented. The relationship between biochemistry and clinical aspects of dentistry is presented by clinical correlation speakers.

**BIOC 5083. Hydrodynamic Methods. 2 Credit Hours.**

This course is intended to provide students with the opportunity to gain a solid understanding of hydrodynamics and macromolecular transport processes, such as sedimentation and diffusion. The focus will be on hydrodynamic methods involving analytical ultracentrifugation and light scattering. Topics in sedimentation velocity, sedimentation equilibrium, buoyant density sedimentation, as well as static and dynamic light scattering and the complementarity of these approaches will be discussed. Macromolecular interactions involving mass action, concentration dependent nonideality, and reaction rates are covered. This course will also cover a range of data analysis approaches including the van Holde-Weischet method, the second moment method, direct boundary fitting by finite element modeling, the C(s) method, the 2-dimensional spectrum analysis, genetic algorithm optimization, nonlinear least squares fitting approaches to user-defined models. Statistical analysis using Monte Carlo and bootstrap methods also will be covered. Open for Cross Enrollment on Space Available basis.

**BIOC 5085. Biophysical Methods In Biology. 2 Credit Hours.**

This course is required for all students enrolled in the Molecular Biophysics and Biochemistry track. The course covers modern biophysical methods for studying biological macromolecules in sufficient detail to understand the current literature. Topics to be covered include macromolecular structure determination by X-ray crystallography and NMR spectroscopy; absorbance, fluorescence, and EPR spectroscopy; circular dichroism; light scattering; mass spectrometry; and hydrodynamics, including diffusion, electrophoresis, sedimentation velocity, and sedimentation equilibrium. Open for Cross Enrollment on Space Available basis.

**BIOC 5087. Molecular Genetics And Biotechnology. 1 Credit Hour.**

This course is required for all students enrolled in either Molecular Biophysics & Biochemistry Track. The objective of this course is to provide comprehensive treatment of approaches to experimental biochemistry and [biophysics rooted in genetics, recombinant DNA technology, and genomics.

**BIOC 5091. Special Topics In Biochemistry: Hydrodynamic Methods. 1 Credit Hour.**

This course is intended to provide students with the opportunity to gain a solid understanding of hydrodynamics and macromolecular transport processes, such as sedimentation and diffusion. The focus will be on hydrodynamic methods involving analytical ultracentrifugation and light scattering. Topics in sedimentation velocity, sedimentation equilibrium, buoyant density sedimentation, as well as static and dynamic light scattering and the complementarity of these approaches will be discussed. Macromolecular interactions involving mass action, concentration dependent nonideality, and reaction rates are covered. This course will also cover a range of data analysis approaches including the van Holde-Weischet method, the second moment method, direct boundary fitting by finite element modeling, the C(s) method, the 2-dimensional spectrum analysis, genetic algorithm optimization, nonlinear least squares fitting approaches to user-defined models. Statistical analysis using Monte Carlo and bootstrap methods also will be covered.

**BIOC 5092. Nuclear Magnetic Resonance Spectroscopy For Biochemists. 2 Credit Hours.**

This course provides a working knowledge of the basic underlying theory of modern pulsed Nuclear Magnetic Resonance methods in the study of the structures and internal dynamics of biological macromolecules in solution. The theoretical concepts to be covered include an overview of pulse excitation, digital sampling, and Fourier transformation. The product operator formalism will be used to describe how modern multinuclear multidimensional pulse methods function to yield the desired signals. The practical concepts to be covered will include an overview of modern methods for obtaining sequential resonance assignments, determining high-resolution three-dimensional structures, and analyzing internal dynamics.

**BIOC 5093. Data Analysis In Biochemistry And Biophysics. 1 Credit Hour.**

This course is required for all students enrolled in either Molecular Biophysics & Biochemistry Track, or the Diabetes & Metabolic Disorders Track, and is open to all students enrolled in the Integrated Multidisciplinary Graduate Program. The course covers statistical and mathematical analysis of typical biochemical data. Topics to be discussed include: enzyme kinetics, first and second order chemical reactions, ligand binding, scintillation counting of radioactivity, UV-VIS difference and derivative spectra, analytical ultra-sedimentation, and solution of multiple simultaneous equations using matrix algebra. Emphasis is placed upon the use of computers to analyze experimental data using programs running under Windows, or Linux platforms. Students will also become familiar with file transfers between these two platforms and the use of VNC viewer to enable their PC computers to be used as a Linux terminal.

**BIOC 6010. Gene Expression. 2 Credit Hours.**

The course covers gene expression focusing on regulation at the levels of transcription, RNA processing, transport and stability, and translation. Proteins and other regulatory molecules involved in these processes will also be covered. Particular emphasis will be placed on transcriptional control mechanisms including: RNA polymerases, chromatin remodeling, methylation and other epigenetic modifications, families of transcription factors including their DNA binding properties, protein-protein interaction domains, trans-activation mechanisms, regulation by ligand binding, phosphorylation and other signaling mechanisms and nuclear-cytoplasmic transport; posttranscriptional mechanisms including: mechanisms of RNA splicing, nuclear-cytoplasmic transport of RNA, RNA localization and targeting, RNA stability; and translational control. Post-transcriptional and translational control mechanisms will highlight the roles of RNA binding proteins and their modifications in these processes. Prerequisite: INTD 5000.

**BIOC 6015. Metabolic Disorders. 2 Credit Hours.**

This course will present an introduction to dysfunctions in normal metabolic processes that lead to major human disorders and pathologies. Major topics to be covered include the causes and pathogenesis associated with Type 2 diabetes, obesity, and related hormonal signaling pathways. Other topics will focus on lipid and protein metabolic disorders, and on dysfunctions associated with mitochondrial and extracellular matrix defects.

**BIOC 6029. MBB Journal Club and Student Research Presentations. 2 Credit Hours.**

To be taken by all graduate students in the MBB track each semester starting with the second year. Students will each make one presentation per semester. Presentations will typically be of a recent journal article in the area of biochemistry or biophysics. Journal articles for presentations must be approved by the instructor. With permission, a student may present a summary of his or her doctoral research. In the Spring semester of their third year, students will present a review of literature relevant to their doctoral research. Grading will be based on both the presentation and involvement in class discussion.

**BIOC 6035. Drug Design And Discovery. 2 Credit Hours.**

This course covers state-of-the-art approaches to the discovery and design of drugs - from small molecules to peptides - as well as drug delivery vehicles, with a strong emphasis on structure-based approaches. Topics to be covered will include the following: high-throughput screening, fragment based drug discovery, protein:protein and protein:ligand interactions, use of nuclear magnetic resonance (NMR), surface plasmon resonance (SPR) and fluorescent methods in drug discovery, virtual (in silico) screening, peptides and peptidomimetics, structure based drug design, and use of macromolecular assemblies as drug delivery vehicles and as targets for drug therapy. Prerequisites: INTD 5000 Open for Cross Enrollment on Space Available basis.

**BIOC 6036. Macromolecular Structure & Mechanism. 2 Credit Hours.**

This course will cover the fundamentals of protein and nucleic acid structure and of enzyme catalysis. The course is required of students in the Molecular Biochemistry and Biophysics Track. Topics to be covered include: DNA and RNA structure, protein structure, protein folding, ligand binding by proteins, and enzyme catalysis. Open for Cross Enrollment on Space Available basis.

**BIOC 6037. Integration Of Metabolic Pathways. 2 Credit Hours.**

The course is required of students in the Molecular Biophysics and Metabolic Pathways track. The objective is to provide an understanding of the individual reactions in intermediary metabolism and how the reactions are integrated by regulatory mechanisms. Topics include carbohydrate, lipid, and nitrogen metabolism and mechanisms of regulation of individual enzymes and metabolic pathways. Open for Cross Enrollment on Space Available basis.

**BIOC 6038. Surface Plasmon Resonance Workshop. 0.5 Credit Hours.**

Surface plasmon resonance can be used to measure the equilibrium and rate constants of a variety of biomolecular interactions, including protein-protein, protein-small molecule, protein-nucleic acid and protein-phospholipid. In this laboratory intensive workshop, students will be exposed to the principles of experimental design, data collection, and data analysis utilizing state of the art instrumentation and model interactions.

**BIOC 6069. Contemporary Biochemistry Student Review. 1 Credit Hour.**

The course has two aspects. In the first, students will have the opportunity to put together a didactic lecture on a biochemical topic, essentially an oral review. Alternatively, students who attend a scientific meeting may pick a theme that was presented at that meeting in any of multiple venues (symposia, platform presentations, posters) and develop it as a presentation equivalent to an oral review. In each case, students will research the background of the material and present the latest findings. This is not intended to be a journal club but rather a didactic or teaching lecture. The course Director will work with the students ahead of time to assist them in preparing their presentation. The second aspect is that students who are not themselves presenting are required to attend the presentations. Biochemistry students must present at least once in years 3.5 of their matriculation in order to graduate with the Ph.D. degree. May be repeated for credit.

**BIOC 6071. Supervised Teaching. 1-9 Credit Hours.**

This course consists of teaching medical or dental biochemistry under close supervision of instructors. Management of small conference teaching groups as well as formal lecture presentations will be included.

**BIOC 6097. Research. 1-12 Credit Hours.**

This course consists of independent, original research under the direction of a faculty advisor.

**BIOC 6098. Thesis. 1-12 Credit Hours.**

Registration for a least one term is required of M.S. candidates.

**BIOC 7099. Dissertation. 1-12 Credit Hours.**

Registration for at least two terms is required for Ph.D. candidates.

**CSBL Courses****CSBL 3005. Advanced Anatomy. Credit Hours.**

Selected students will participate in lectures, detailed dissections, presentations, and teaching of Pre-Matriculation students in the gross anatomy laboratory. A special project or readings in the surgical anatomy literature will be assigned. This elective is considered to be a full-time commitment (40 hours per week). Students are expected to 1) attend all lectures given in the Pre-Matriculation program, 2) to teach in all scheduled laboratory sessions, 3) to prepare and present prosections, 4) to help prepare a laboratory examination, 5) to write and present a literature review on an original topic of interest to the student related to the region of the body being studied.

**CSBL 4000. Special Topic. 4 Credit Hours.**

This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

**CSBL 4001. Anatomy of the Newborn. 4 Credit Hours.**

Detailed gross dissection and study of newborn specimen with special emphasis on developmental origins as well as features and relationships differing from the adult; combined with library study of developmental malformations. Course fees: Lab fee \$30.

**CSBL 4002. Regional Anatomy. 4 Credit Hours.**

Anatomy associated with one of the usual medical or surgical specialties, such as gastroenterology, neurology, orthopedics, obstetrics and gynecology, etc. Activities include detailed dissection, presentation of dissected material, assigned readings, and individual project. Course fees: Lab fee \$ 30.

**CSBL 4004. Selected Research Project. 4 Credit Hours.**

Individual research projects to be arranged between the student and faculty members with whom he/she wishes to work.

**CSBL 4005. Advanced Anatomy. 4 Credit Hours.**

Selected students are required to participate in lectures, detailed dissections, presentations of prosected material, and teaching in the first year medical gross anatomy laboratory. Special projects, activities, and assigned readings in the surgical anatomy and history of anatomy literature. Course fees: Lab fee \$30.

**CSBL 4017. Advanced Neuroanatomy. 4 Credit Hours.**

Selected students will be assigned a special project and readings in the neuro anatomical literature. Course Fees: Lab fee \$30.

**CSBL 4024. History of Anatomy In Situ: Reawakening & Development of Anatomy in the 14th - 18th Century Italy. 4 Credit Hours.**

An in-depth study of the awakening and development of anatomy in 14th - 18th century Italy, visiting the sites where this occurred in Padua, Bologna, and Florence. The course consists of one week of didactic lectures and discussion prior to two weeks in Italy visiting anatomical museums and two of the oldest universities in the world, and ending with a week of student presentations based on a paper focusing on a historical, social, or scientific issue arising during this period in the Italian medical schools and currently relevant to the students' chosen field of medicine.

**CSBL 4025. Anatomy Mentored Teaching. 4 Credit Hours.**

The Mentored Teaching Elective allows 3rd and 4th year medical students to serve as teaching assistants for the spring CSBL 5022 Inter-professional Human Gross Anatomy course. CSBL 5022 serves students in the occupational therapy, physical therapy, physician assistant and biomedical engineering programs, and students in the Masters of Anatomy graduate program. Teaching assistants will serve as instructors for laboratory dissections which cover the central and peripheral nervous systems, vertebral column and back, the upper and lower limbs, head and neck, body wall, thorax, abdomen, pelvis, and perineum. Other teaching assistant duties include preparation of prosection specimens for teaching and demonstration, lab practical exam setup and grading, and preparation and presentation of a brief topical review relevant to anatomy. Applicants should have attained a minimum grade of B in Language of Medicine and in Musculoskeletal/Dermatology and exhibit the highest standards of professionalism. Enrollment is by permission of the Undergraduate Medical Education Office and by the course directors.

**CSBL 5007. Methods In Cell Biology. 1 Credit Hour.**

Through a combination of lectures and demonstrations, the instructors will introduce students to techniques which are currently being used in cellular biology laboratories. The emphasis will be on the applications themselves, their uses, limitations, and the necessary controls. The following topic areas will be covered: imaging and microscopy, immunological techniques, bioinformatics (DNA and protein), rodent anatomy and histology, cytogenetics, and in vitro cell growth and transfection.

**CSBL 5012. Physician Assistant Gross Anatomy. 5 Credit Hours.**

This course will cover the basic principles of human anatomy. Lectures are correlated with laboratory sessions in which students will learn human gross anatomy of the adult through the study of cadaver prosections, bones, models, atlas drawings and radiographs. Emphasis will be placed on basic systems anatomy as they apply to the physician's assistant. Course Fees: Gross Anatomy fee \$30.00.

**CSBL 5013. Gross Anatomy. 6 Credit Hours.**

This course will teach structural and functional anatomy of the normal human body. Lectures will serve as introductory information for the laboratory dissections to follow and to clarify the interactions of the various anatomical components to accomplish the function of the body. The course will cover the central and peripheral nervous systems, vertebral column and back, head and neck, body wall, thorax, abdomen, pelvis, and perineum, and the upper and lower limbs. Special emphasis will be placed on the laboratory experience in which the learner will perform a detailed dissection of the entire human body in order to achieve an understanding of the three-dimensional relationships and thus the interactive function of the body. These dissections will be supplemented by the study of prosected specimens, models skeletons, and other demonstration materials. Course fees: Lab fee \$30 Human Materials fee \$865.

**CSBL 5015. History Of Anatomy. 2.5 Credit Hours.**

The history of anatomy course is designed to acquaint medical, dental, and graduate students with the history of medicine and especially with the physicians and scientists who made essential discoveries in human anatomy. Using a biographical approach, the course is presented as a seminar with lectures, assigned readings and student presentations.

**CSBL 5016. Dental Gross Anatomy. 6 Credit Hours.**

The focus of this course is the structure of the human body, with emphasis on the functional anatomy of the trunk, neck, head, and nervous system. Regional dissection of a human cadaver, by groups of students, is supplemented by individual study of prosections, models, skeletons, and other demonstration materials and is guided by lectures, conferences, and films. The first part of the course, which deals with the anatomy of the thorax and abdomen, presents a general overview of the functional architecture of most major body systems. The emphasis is on principles of structure, to allow development of a holistic understanding of human biology, both normal and pathological. The latter half of the course is devoted to study of the head and neck; greater emphasis will be placed on anatomical relationships with obvious reference to clinical dentistry. Course Fees: Human materials fee: \$865 Lab fee: \$30.

**CSBL 5019. Gross Human Anatomy For Graduate Students. 6 Credit Hours.**

This course will teach structural and functional anatomy of the normal human body. Lectures will serve as introductory information for the laboratory dissections to follow and to clarify the interactions of the various anatomical components to accomplish the function of the body. The course will cover the central and peripheral nervous systems, vertebral column and back, head and neck, body wall, thorax, abdomen, pelvis and perineum, and the upper and lower limbs. Special emphasis will be placed on the laboratory experience in which the learner will perform a detailed dissection of the entire human body in order to achieve an understanding of the three-dimensional relationships and thus the interactive function of the body. These dissections will be supplemented by the study of prosected specimens, models skeletons, and other demonstration materials. Permission of course director if required to enroll. Course fees: Human materials fee \$ 865 Lab fee \$30.

**CSBL 5020. Dental Neuroscience. 1.5 Credit Hour.**

This course will present the student with the basics of neuroanatomy underlying somatosensory perception, special senses, orofacial reflexes, and common neurological disorders. The emphasis will be on neuroanatomical pathways relevant to the head and neck, especially those mediated by the trigeminal system. The course also will include consideration of motor pathways and the special senses, disorders of which will necessarily influence treatment plans developed by future dental practitioners. Acquisition of a basic understanding of the neuroanatomical pathways discussed in lectures will be reinforced by laboratory sessions with representative images of brain and spinal cord sections.

**CSBL 5022. Inter-professional Human Gross Anatomy. 5.5 Credit Hours.**

This courses will teach structural and functional anatomy of the normal human body. Lectures will serve as introductory information for the laboratory dissections to follow and to clarify the interactions of the various anatomical components to accomplish the function of the body. The course will cover the central and peripheral nervous systems, vertebral column and back, the upper and lower limbs, head and neck, body wall, thorax, abdomen, pelvis, and perineum. Special emphasis will be placed on the laboratory experience in which the learner will perform a detailed dissection of the entire human body in order to achieve an understanding of the three-dimensional relationships and thus the interactive function of the body. The dissections will allow the student to understand the anatomical basis for disease and dysfunction in organ systems and their applications to clinical practice. They will be supplemented by the study of prosected specimens where possible, models skeletons, and other demonstration materials.

**CSBL 5023. Development. 1 Credit Hour.**

The course provides a survey of concepts in developmental biology (induction, cell-cell interactions, morphogen gradients, morphogenetic movements, transcription regulation, organogenesis) using experimental examples from both invertebrate and vertebrate embryos. The first set of lectures will focus on gametogenesis, fertilization, and early developmental events, such as cleavage, midblastula transition, gastrulation, and axis formation. The second set of lectures will explore the fates of germ layers in the contexts of cell type-specific differentiation and cell-cell interactions during organogenesis.

**CSBL 5024. Genomics. 1 Credit Hour.**

This course covers historical aspects of the Genomic project and high throughput methods (microarray, SAGE, proteomics, etc.) to perform global analysis of gene expression; the course also provides an overview of new biological fields such as systems biology, functional genomics, and comparative genomics. The students will have the opportunity to become familiarized with tools, methods, databases, and approaches used to extract biological information from global analyses. Hands-on training on biological databases and classes covering examples of the use of genomics to answer questions related to cancer and diseases is an important part of the course, helping the students to visualize how genomics can be used in their own research projects.

**CSBL 5025. Genetics. 1 Credit Hour.**

This course is designed to provide an overview of genetic research. Topics to be covered include: cytogenetics, mitochondrial genetics, cancer genetics, linkage analysis, complex traits, population genetics, animal models, sex determination, and epigenetics.

**CSBL 5026. Stem Cell Biology. 1 Credit Hour.**

This course is an up-to-date overview on current topics in stem cell biology. It is intended for the (future) basic scientist who is interested in studying the regulatory mechanisms of stem cells as well as for the (future) clinician who is interested in how stem cell biology will continue to impact patient care. Topics that will be discussed are: (1) basic biology and stem cells, including embryonic stem cells, adult stem cells, stem cells in different tissues and model systems; (2) microenvironment-mediated; (3) epigenetic regulators of stem cells; (4) stem cells in medicine, including regenerative medicine, cancer and aging; and (5) ethics.

**CSBL 5030. Basic Histology. 1 Credit Hour.**

This course is designed to provide students in the Anatomical Sciences track of the M.S. degree program an introduction to microscopic cell structures and relevant functions followed by study of the four basic human tissues (epithelial, connective, muscle and nervous tissues). In addition, a few specialized tissues (blood cells, bone, cartilage and lymphoid tissues) will be examined in depth to develop skill in understanding function in relation to viewing microscopic anatomical features. Overall, this course is meant to provide a foundation for the understanding of the microscopic architecture of the organ systems of the body and the role these play in normal activity and disease processes. Lectures, independent study (self-directed learning), and laboratory experiences will be used in teaching the fundamentals of human histology.

**CSBL 5032. Dental Histology. 5 Credit Hours.**

Through lectures, demonstrations, and laboratory work, students in this course will be given the opportunity to study the microscopic structure of the basic tissues and organs of the human body, followed by details of the embryologic development and microscopic structure of the various organs of the oral cavity. Current concepts in cellular biology are presented during the portion of the course in which they are most relevant. The general purpose of this course is to give students the opportunity to become acquainted with the basic embryology, cytology, and histology of normal human tissues and organs, thereby providing a foundation of knowledge for the understanding of normal activity and disease processes. Course Fees: Included in general lab fee. \$48 microscope fee for the Freshman year includes this course.

**CSBL 5033. Brain Health Journal Club. 1 Credit Hour.**

A journal club with an emphasis on brain health. The scope of the journal club is broad, with topics ranging from molecular mechanisms to the impact of injuries on behavior. Brain injuries ranging from stroke, spinal cord injury and traumatic brain injury (TBI) to age-associated neurodegeneration will be emphasized. Scientific articles on relevant or state-of-the-art techniques will also be encouraged. On a rotating basis, participants will be expected to present to the group either a paper of interest and relevance to their work or an update on their ongoing research or some combination of the two. PowerPoint slides are discouraged in favor of a chalk talk when presenting to the group.

**CSBL 5060. Advanced Histology. 2 Credit Hours.**

This course, designed for students enrolled in the Anatomical Sciences track of the MS degree program in Cell Systems & Anatomy, will examine the microscopic architecture of organs and their higher level organization into systems performing specific functions. Topics covered will include the integumentary, cardiovascular, respiratory, gastrointestinal, endocrine, urinary and male and female reproductive systems. The goal of this course is to enable students acquire knowledge of normal histological structure of organs and organ systems using light and electron microscopy, thereby providing a strong basis for the sound understanding of cell and tissue morphology in health and disease. The course will include lecture, laboratory and self-directed student learning. A prerequisite for this course is Basic Histology.

**CSBL 5074. Introduction to Research. 0.5 Credit Hours.**

This course is required of all MS students in the Anatomy Track in Cellular & Structural Biology and is available to the Biotechnology Track students. Students will have the opportunity to learn about the research interests of faculty in the program. This course will introduce students to the research strategies and help them identify a mentor and committee members.

**CSBL 5077. Scientific Writing. 2 Credit Hours.**

This course will provide students with the opportunity to develop skills in scientific writing and the presentation of research results. It will emphasize learning-by-doing-and-re-doing. Students will be required to write something every week. The capstone project for students will be to write a grant proposal and defend it in front of the class. One hour per week will be devoted to lecture and critique of published work; the other hour will consist of critique and revision of student writing by other students, as well as by the course director. Topics to be covered include: (1) fundamentals of writing clearly, (2) principles of revision, (3) effective presentation of data, (4) fundamentals of oral presentation, (5) writing/presenting to the appropriate audience, (6) how to write background/introductory sections, (7) how to write materials and methods, (8) how to write the discussion section, and (9) how to constructively critique one's own and others writing.

**CSBL 5083. Practical Optical Microscopy. 1 Credit Hour.**

This course will be a one-hour elective for graduate students consisting of eight (8) one-hour lectures plus eight (8) one-hour laboratories. The course focuses on the practical aspects of using optical microscopes. The objectives are to teach students the fundamental principles of optical microscopy and to provide them with hands-on experience using the optical instrumentation in the Institutional Imaging Core.

**CSBL 5089. Graduate Colloquium. 2 Credit Hours.**

This course is designed to provide graduate students with training in evaluating the scientific literature and in presentation of research in a seminar or journal club format. The course will focus on critical thinking, including evaluation of existing literature, interpretation of experimental results, and comparison of alternative models and interpretations. These tools are essential both for oral presentations and for writing grant proposals and manuscripts. Emphasis will be placed on evaluation of the science, organization of the manuscript, and on oral presentation skills.

**CSBL 5091. Special Topics. 1-9 Credit Hours.**

No description available.

**CSBL 5095. Experimental Design And Data Analysis. 3 Credit Hours.**

The purpose of the course is to provide an introduction to experimental design and statistical analysis. The emphasis of the course will be on the selection and application of proper tests of statistical significance. Practical experience will be provided in the use of both parametric and nonparametric methods of statistical evaluation. Among the topics to be covered are: data reduction, types of distributions, hypothesis testing, scales of measurement, chi square analysis, the special case of the comparison of two groups; analysis of variance; a posteriori multiple comparisons tests, tests of the assumptions of parametric analyses, advanced forms of the analysis of variance, linear regression, and correlation analysis. This course involves the use of statistical software; therefore, access to a laptop or a computer with web access for classes and examinations is required.

**CSBL 6015. Selective Topics In Oncology: Gynecological Cancers. 2 Credit Hours.**

This advanced elective course for the Cancer Biology Track provides a unique learning experience intended to prepare students in the emerging research areas of gynecological cancers for designing research experiments using pre-clinical and clinical research materials. The entire course comprises a small-group format in which students interact closely with a group of faculty who has active research or clinical programs focusing on molecular, clinical, and therapeutic areas of gynecological cancers.

**CSBL 6021. Animal Models. 3 Credit Hours.**

The relevant biology, applicability, and practical use of a number of animal models to biomedical research is covered. Invertebrate (e.g., *C. elegans*) and vertebrate (e.g., fish and rodents) model systems are included in the course. Strengths and weaknesses of each organism that render them particularly valuable as animal models are emphasized. Experimental approaches and tools that are utilized in conjunction with each animal model are rigorously examined. The course is taught from primary scientific literature using classic historical publications and recent publications.

**CSBL 6040. Gross Anatomy Mentored Teach. 1 Credit Hour.**

The Gross Anatomy Mentored Teaching Elective allow students in the Integrated Biomedical Sciences Program, School of Health Professions, and other qualified students to serve as preceptors for the spring CSBL 5022 Interprofessional Human Gross Anatomy course. CSBL 5022 serves students in the occupational therapy, physical therapy, physician assistant and biomedical engineering programs, and students in the Masters of Anatomy graduate program. Preceptors will serve as instructors for laboratory dissections which cover the central and peripheral nervous systems, vertebral column and back, the upper and lower limbs, head and neck, body wall, thorax, abdomen, pelvis, and perineum. Other preceptor duties include preparation of prosection specimens for teaching and demonstration, lab practical exam setup and grading, and preparation and presentation of a brief topical review relevant to anatomy. Students enrolling in this elective must have taken an approved human gross anatomy course (as determined and agreed upon by the course directors) with a minimum final grade of B within the previous five years.

**CSBL 6048. Biology of Aging. 4 Credit Hours.**

Biology of Aging is the core course of the Biology of Aging Track. The course consists of two modules: Aging and Longevity Mechanisms and Molecular and Cellular Mechanisms of Aging. The purpose of this course is to provide students with the most up-to-date information on the current understanding of the aging process. This advanced interdisciplinary graduate course provides experimental understanding of the interrelated areas of aging and age-related diseases. Faculty from several departments will be involved in teaching this course, which will cover the molecular and cell biology of aging, model systems used for aging studies, age-related changes in organs and tissues, and age-related diseases.

**CSBL 6049. Cellular and Molecular Mechanisms of Aging. 2 Credit Hours.**

This course provides up-to-date information on the current understanding of cellular and molecular mechanisms that contribute to aging. The focus is on investigation of specific mechanisms of aging including oxidative stress, nutrient sensing signaling pathways, stem cells and senescence, and genome stability. Experimental design and analysis, including pros and cons of approaches used to gain knowledge and how to appropriately interpret data, will be discussed throughout the course. The relationship between age-related changes in function and potential contributions age associated diseases will be examined via recently published research.

**CSBL 6050. Aging and Longevity Mechanisms. 2 Credit Hours.**

This module will focus on and evaluate several approaches used to modulate longevity and how these are used to discover the genetic, physiological and intracellular foundation of aging processes. The course will consist of interactive lectures complemented by guided reading of currently research papers. Students will be taught to hone critical reading skills and develop testable hypotheses to carry research forward. Topics will include: Genetics of Aging, Exceptional Longevity, Pharmacological Interventions, Calorie Restriction, Healthspan and Pathology of Aging.

**CSBL 6058. Neurobiology Of Aging. 2 Credit Hours.**

The nervous systems of many species, including humans, show obvious declines in function as a result of increasing age. In addition to the gradual decline observed in neural function, it is clear that increasing age also results in increased susceptibility of the nervous system to degenerative diseases such as Alzheimer's Disease, Parkinson's Disease, and Amyotrophic Lateral Sclerosis. This course will focus on recent findings and topics related to the underlying pathology of aging in the nervous system and the relationship of aging to neurodegenerative disease.



**CSBL 6059. Stem Cells & Regenerative Medicine. 1 Credit Hour.**

The fields of stem cells and regenerative medicine are rapidly evolving and have great potential to change the way medicine is practiced. This course will encompass topics from basics of tissue specific stem cell biology to pre-clinical animal models, strategies and progress in regenerative medicine. We will discuss some of the most current research being done in regenerative medicine from stem cell transplantation to biomaterials. Prerequisite: INTD 5000.

**CSBL 6060. Anatomical Sciences Thesis. 1-8 Credit Hours.**

Designed as an alternative to a "bench research"- based thesis, this longitudinal course for the Anatomical Sciences track in the Masters Program will culminate in the production of a thesis ideally suitable for adaptation as a scholarly publication in a peer-reviewed journal. The thesis should focus on assessment of an unanswered and important question on a relevant and approved subject, involve in-depth research and demonstrate critical thinking on the part of the student. A student in the Anatomical Sciences Track will meet with the Course Director during the spring semester of his/her first year in the program to begin to identify a research area and specific topic(s) for his/her thesis proposal. Areas of focus include (but are not limited to) the following: 1) Clinical Anatomy - anatomy related to medical procedures and/or training of health professionals; 2) Anatomical Variations - comparative research utilizing human cadavers in the gross anatomy laboratories or comparative research in animal models; 3) Anatomical Sciences Education - education research on anatomy teaching methods and approaches to teaching anatomy to health professions students; 4) History of Anatomy - research on the development of human anatomical studies, comparative anatomy concepts, anatomy education, or involving other applications of the humanities to anatomical sciences (e.g. medical illustration, literature, music); 5) Human and rodent micro-anatomy /histology; or 6) Anatomical aspects of a biomedical research endeavor.

**CSBL 6064. Genes & Development. 4 Credit Hours.**

Genes and Development is the core course of the Genetics, Genomics, and Development Track. The course consists of four modules: genetics, genomics, developmental biology, and stem cell biology. Basic concepts in genetics such as cytogenetics, mitochondrial genetics, cancer genetics, linkage analysis, complex traits, population genetics, animal models, sex determination, and epigenetics will be presented. The genomics section will include historical aspects of the genome project and high throughput analysis. The students are introduced to new techniques in global analysis as well as have hands-on experience. The developmental biology section provides a survey of concepts in developmental biology (induction, cell-cell interactions, morphogen gradients, morphogenetic movements, transcriptional regulation, organogenesis) using experimental examples from both invertebrate and vertebrate embryos. The stem cell biology section includes the following topics: basic biology of stem cells, including embryonic stem cells, adult stem cells, stem cells in different tissues and model systems; microenvironment-mediated and epigenetic regulators of stem cells; stem cells in medicine, including regenerative medicine, cancer, and aging; and ethics. Required for the Genetics, Genomics & Development Track.

**CSBL 6068. Cancer Biology Core 1; An Introductory course. 1 Credit Hour.**

This course introduces the key features of cancer biology. In particular this course will provide initial insight into the clinical presentation and the cellular processes involved in cancer biology. In addition will be an initial presentation of molecular oncology. Topics examined include oncogenes, tumor suppressor genes, apoptosis, control of cell cycle regulation, and control of cellular growth and proliferation. Required for Cancer Biology Discipline. Prerequisites: INTD 5007 (or INTD 6007 and INTD 6009).

**CSBL 6069. Cancer Biology Core 2; Advanced Cancer Biology. 2.5 Credit Hours.**

This course is designed to provide a detailed representation of cancer biology, from progression, standard of care and molecular alterations that drive recent diagnoses and therapeutic strategies. In addition, this course will offer an overview on special populations affected by cancers and models used in the investigation of cancer. Included are basic experimental methods, mouse models, ex vivo systems, molecular profiling and clinical trials. The conceptual notions on clinical trials of cancer drugs and the process of development of novel therapeutic drugs in cancer will be discussed. Required for Cancer Biology Discipline. Prerequisites: INTD 5007 (or INTD 6007 and INTD 6009) and CSBL 6068.

**CSBL 6070. Cancer Biology Preceptorial. 0.5 Credit Hours.**

This is a discussion-based course to help unify our cancer biology students. The idea is to work in a small team based manner for students to disseminate knowledge that they are obtaining by participating in advanced courses of different topics by presenting the topic, methods and relevance to cancer biology to their peers. The intent is that participating students will discuss the topic in detail to understand how it might be useful to cancer biology research, in effect an active learning process. The goal is to provide an integrated multidisciplinary view on cancer research. Prerequisites: CSBL 6068 and CSBL 6069.

**CSBL 6071. Supervised Teaching. 1-12 Credit Hours.**

This course consists of participation in the teaching program of the first-year medical, dental, or health professions curriculum. Semester hours vary depending on the time spent in teaching.

**CSBL 6072. Presentation Skills. 0.5 Credit Hours.**

This course is designed to provide graduate students in the CSB masters program the opportunity to develop their skills in oral presentation. The course will focus on critical thinking, clear and concise presentation of research endeavors, and communicating science to the public, to students, and to other scientists. The course will meet for 1 hour every other week and is intended for MS students in their second year of study. Part I (Fall Semester) will focus on general scientific presentation skills.

**CSBL 6073. Selective Topics In Oncology: Gynecological Cancers. 2 Credit Hours.**

This is an advanced elective course for the Cancer Biology Track. The course is a unique learning experience in preparing students in the emerging research areas of gynecological cancers for designing research experiments using preclinical and clinical research materials. The entire course is a small-group format in which student interact closely with a group of faculty who have active research or clinical programs focusing on molecular, clinical, and therapeutic areas of gynecological cancers.

**CSBL 6074. Molecular Aspects Of Epigenetics. 2 Credit Hours.**

The purpose of this course is to develop an understanding of the molecular aspects of epigenetics. This advanced course will be a unique learning experience that prepares the student to evaluate and design new research in the areas of epigenetic processes including imprinting, gene silencing, X chromosome inactivation, position effect, reprogramming, and the process of tumorigenesis. This module concerns epigenetic mechanisms. Topics include: DNA methylation, histone modifications, epigenetics and stem cells, cancer epigenetics, RNA interference and epigenetics, bioinformatics and epigenetics, and translational epigenetics. This course will include a didactic program and student discussion. For the student discussion module, faculty and students will jointly discuss key publications that serve to bridge the gap between the student's prior understanding of the field and the state of the art in that area.

**CSBL 6075. Cancer Biology Enrichments Course. 0.5 Credit Hours.**

This course is a series of enrichment presentations to the students, either in lecture format, visit to labs or attendance of a conference. The goal is to give secondary reinforcements of the didactic components of the core courses on cancer biology. Required for Cancer Biology Discipline.

**CSBL 6090. Seminar. 1-9 Credit Hours.**

Attendance and participation in the regularly scheduled department seminar series is required each semester the course is offered. The activities included in the seminar course are attendance at invited seminars, journal club, and the student presentations including student annual progress and final dissertation and thesis presentations.

**CSBL 6094. Advanced Neuroanatomy. 0.5 Credit Hours.**

This course in neuroanatomy is offered to graduate students seeking to advance their knowledge beyond the fundamental level. The course consists of reading from more advanced texts and current anatomical literature as well as dissection of deep white matter tracts within the cortex. The student must also complete a 20-page paper on a neuroanatomical topic.

**CSBL 6095. Functional Genomic Data Analysis. 2 Credit Hours.**

This course covers basics of genomic data analysis. Focus is on general computational methods, their biomedical basis, and how to evaluate analysis results. Qualitative algorithm descriptions are expected. Prerequisites: CSBL 5095 or Equivalent.

**CSBL 6097. Research. 1-12 Credit Hours.**

This course consists of independent, original research under the direction of a faculty advisor.

**CSBL 6098. Thesis. 1-12 Credit Hours.**

This course consists of instruction in the preparation of the thesis. Registration for at least one term is required of M.S. candidates. Admission to candidacy for Master of Science degree is required.

**CSBL 6165. Medical Genetics. 3 Credit Hours.**

This course provides an introduction to the basic concepts of medical genetics and current areas of medical genetic research. The course reviews basic genetic concepts including the principles of Mendelian and nontraditional inheritance, cytogenetics, molecular genetics, quantitative and population genetics, and discuss important medical aspects of genetic counseling and pedigree analysis, dysmorphology, cancer genetics and counseling for inherited cancers, developmental genetics, prenatal diagnosis, newborn screening, and pharmacogenetics. Diagnosis and current research toward treatment and cure of common genetic disorders affecting metabolism, reproduction, the endocrine system, the functioning of the eye and the nervous system are discussed. An important aspect of the course will be a discussion of ethical issues in medical genetics. A basic background in genetics, cell biology, and biochemistry is assumed. Prerequisites: A basic background in genetics, cell biology, and biochemistry.

**CSBL 7014. Anatomy 1. 5 Credit Hours.**

This course provides the basic principles of human anatomy. Students have the opportunity to learn human anatomy as it relates to function through the study of bones, cadaver prosections, models, atlas drawings and photographs, and their own bodies. Concentration is on osteology, radiology, arthrology, neuromuscular, vascular, and basic systems anatomy as they apply to physical therapy. Course fees: Lab Assistance fee \$10 per hour Gross Anatomy Lab fee \$30.

**CSBL 7099. Dissertation. 0.5-12 Credit Hours.**

Registration for at least one term is required of Ph.D. candidates. Prerequisites: admission to candidacy for Doctor of Philosophy degree.

**CSBL 8010. Anatomy 2. 2 Credit Hours.**

This course reinforces principles of human anatomy studied in CSBL 7014. Students study human anatomy as it relates to function through cadaver dissection. Concentration is on osteology, radiology, arthrology, neuromuscular, vascular, and basic systems anatomy as they apply to physical therapy. Course fees: Lab Assistance fee \$10 per hour Gross Anatomy Lab fee \$30 Human Materials fee \$865.

**ELEC Courses****ELEC 4077. Wilderness Medicine Enrichment Elective. Credit Hours.**

The curriculum consists of lectures, hands-on scenarios and case-based learning. Students will work as a team to care for patients in the backcountry. All scenarios will conclude with a debriefing by the faculty. Lecture content will include an introduction to Wilderness Medicine and medical content topics including tick bites, hyperthermia, hypothermia and infectious diarrhea, splinting, envenomations, lightning injuries and animal bites. Other educational activities will include safe water procurement, map utilization, patient extrication from the wilderness and basic camping skills. The scenarios will consist of role playing by participating faculty and will include different cases encountered in the wilderness. The medical students will work together as a team to find, care for and extricate the patient as necessary. During the three-day trip we will spontaneously role play during other wilderness activities such as hiking, building a fire or even during a lecture. Patients become ill at any point and we try to maintain some element of surprise with the scenarios. Students will be evaluated on their participation in group-based scenarios and a short quiz administered at the conclusion of the course. This is an enrichment elective and "credit" will be given to the students who showed active participation in the learning sessions.

**ELEC 5004. Surgical Oncology Service. Credit Hours.**

Purpose and objective of this elective is to expose the student to the current and multi-modal approach in the diagnosis and management of cancer. Students will observe and monitor all activities directed to the workup, treatment, and follow-up of patients with cancer. Students will have the chance to observe and participate in the different surgical procedures, specifically those related to the treatment of cancer. He or she will be introduced to and familiarized with the principles and concepts of adjuvant chemotherapy, immunotherapy, and hormonal therapy before and after surgical treatment of different diseases. They will also have the opportunity to observe and partake in the different activities in the conduct of clinical trials as sponsored by the different national cooperative groups, i.e. the Southwest Oncology Group and the National Surgical Adjuvant Breast and Bowel Program. The students will learn the necessity for establishing different protocols in the quest for a greater understanding and improvement in the management of malignant diseases and will participate in the discussion of problems related to cancer patient care during rounds and more didactic teachings during Grand Rounds and the regular conferences of the service. Upon completion of this elective, students will have a fairly significant introduction and familiarization into clinical surgical oncology.

**ELEC 5006. Beginning Medical Spanish. Credit Hours.**

This is not a Spanish language course, per se, but is designed to teach medical students how to perform specific tasks in Spanish. As such, there is no specific Spanish prerequisite to enroll in this course. Students who are interested in acquiring Spanish language in general are invited to enroll in a traditional Spanish course.

**ELEC 5022. History Of Anatomy. Credit Hours.**

This course is designed to acquaint medical, dental and graduate students with the history of medicine and especially with the physicians and scientists who made essential discoveries in human anatomy. Using a biographical approach, the course is presented as a seminar with lectures, assigned readings and student presentations.

**ELEC 5023. Sports Medicine Perspectives. Credit Hours.**

Course will expose students to the clinical practice of orthopaedic sports medicine. This includes exposure to high school, collegiate and professional sports. Emphasis will be on injury evaluation, prevention and treatment. Sports may include football, basketball, track and field, baseball, soccer, gymnastics and water sports.

**ELEC 5027. Family Violence Education. Credit Hours.**

The course will analyze the dynamics of family violence, including the statistics, myths, types of abuse, characteristics of battered persons, the effect of violence on children, characteristics of batterers, treatment programs, the skills needed for intervention and the responsibilities of the medical profession, the legal profession and law enforcement in family violence.

**ELEC 5029. Environmental Medicine/Border Health. Credit Hours.**

The South Texas Environmental Education and Research (STEER) program gives participants the opportunity to learn about environmental and public health using an in vivo approach "Show, don't tell". During this month-long elective, participants learn about indoor and outdoor air quality, wastewater treatment, food sanitation, heavy metals, pesticides, international health programs, risk management, epidemiology, and zoonosis control, focusing on border health concerns. Participants will learn from local experts about water pollution, tuberculosis, dengue fever, rabies and traditional health practices such as consulting folk healers. This elective is taught in Laredo, Texas. Participants receive free housing and free transportation to and from activities. This opportunity is open to medical students, residents, nursing students, public health students and health care professionals.

**ELEC 5030. Advanced Neuroanatomy. Credit Hours.**

This enrichment selective is intended to reinforce basic principles learned in Medical Neuroscience and to explore in greater depth current research and thought in neuroanatomy. Clinical relevance will also be stressed whenever applicable. The instructor will meet with the student(s) 2-3 hours per week for 4 weeks. A 20-page library research paper is also required. The course will be subdivided into the following components - 1) Essential Concepts - Cell Biology of Neurons & Glia, Electrochemical Basis of Neuronal Integration, Development of the Nervous System & Its Disorders; 2) Regional Neuroanatomy- Ventricles and Meninges, Cerebrovascular System, Spinal Cord, and Brainstem Anatomy; 3) Systems Neurobiology - Somatosensory System Chemosenses, Special Senses, Motor System, Extrapyramidal System, Cerebellum, Limbic System; and 4) Homeostatic Mechanisms.

**ELEC 5031. Introduction To Emergency Medicine. Credit Hours.**

Students will be exposed to clinical emergency medicine in an extracurricular setting by working with assigned preceptors in the University Hospital Emergency Department (with the possible addition of BAMC ED or a community ED experience, including toxicology experience). Students will learn about the specialty of Emergency Medicine and its subspecialties. Students will also receive lectures on core emergency medicine topics and attend case presentations.

**ELEC 5032. Interdisciplinary Issues & Approaches to Death & Dying. Credit Hours.**

The course provides an opportunity to explore issues and interdisciplinary approaches related to death and dying at both the personal and professional levels. Emphasis is placed on the positive and necessary values of compassion, listening and tolerance for varied beliefs. The course encourages participants to engage in constructive critical analysis through self-discovery about death and dying. Areas for discussion include: values clarification, definitions of death, stages of dying, emotions surrounding loss, survivorship, ethical and legal components of death, and transcultural aspects related to death and dying. Communication will be presented as a primary intervention method in dealing with death related issues. Critical analysis of a variety of situations will be stressed as an integral part of the interdisciplinary approach in determining appropriate therapeutic interventions.

**ELEC 5036. Let Your Life Speak: Authentic Decision-Making For Your Medical School Career. Credit Hours.**

This course is designed to give students in their first or second year of medical school a unique opportunity to evaluate their personal decision-making process. The course will provide a forum for learning and dialoguing with other students about the various factors from a student's history and present circumstances that impact how the student makes decisions. Questions like, "How will I choose a specialty?" and "How will I maintain my passion for medicine?" will be addressed as the anatomy of the decision-making process is considered. Class will be held in a guided group discussion format with each student also receiving a one-hour personal coaching session with the instructor during the semester.

**ELEC 5038. Literature and Medicine 1. Credit Hours.**

An elective for second- and fourth-year students, the purpose of the course is for students to use their readings as a tool to prepare for and process their clinical experiences, and to approach their development as people and as physicians. The course also will allow students to interact with other second- and fourth-year students and faculty in a venue that is open and informal. Most of the course will take place on the Web via Blackboard. After each reading block, there will an evening meeting to discuss the story and/or poem. Students will be expected to read the assignments and attend as many of the evening meetings as possible. Open for Cross Enrollment on Space Available basis.

**ELEC 5039. Literature and Medicine 2. Credit Hours.**

An elective for second- and fourth-year students, the purpose of the course is for students to use their readings as a tool to prepare for and process their clinical experiences, and to approach their development as people and as physicians. The course also will allow students to interact with other second- and fourth-year students and faculty in a venue that is open and informal. Most of the course will take place on the Web via Blackboard. After each reading block, there will be an evening meeting to discuss the novel and/or poem. Students will be expected to read the assignments and attend as many of the evening meetings as possible.

**ELEC 5040. Trauma Enrichment Elective. Credit Hours.**

This course is designed to give first- and second-year medical students an introduction to the exciting field of trauma and trauma surgery. It will offer students the opportunity to observe how attendings, medical residents, medical students, and hospital staff work towards caring for patients who suffer from traumatic injury. Students may also have the opportunity to observe the surgeries if approved by the attending on duty.

**ELEC 5041. Homelessness, Addiction, & How To Better Care For Patients. Credit Hours.**

The goals and objectives of this course are to increase awareness about homelessness and addiction and how they relate to healthcare; to prepare first- and second-year students for working at student-run clinics; and encourage student teaching within all four years of medical school. This is a student-run course, led by MS4 students in the Humanism fellowship, for MS1 and MS2 students with a special interest in learning about issues of homelessness and addiction, and how these relate to the provision of healthcare.

**ELEC 5042. Enrichment Elective In Ethics. Credit Hours.**

In this longitudinal course, students will be required to undertake an independent study into a specific issue in medical ethics or medical humanities. Students will be required to read on research methods in medical ethics as well as literature in their issue of interest, and then to propose and conduct an original study project, a literature review, a position paper, or an ethical analysis of a particular topic or case. Students will be expected to write an academically rigorous final research report of 10 to 15 pages. Students will be encouraged to produce a final paper that can be submitted for publication in a peer-reviewed bioethics or medical humanities journal. Students will be required to meet with the instructor and/or chosen faculty advisor over the course for assistance, guidance, and discussion.

**ELEC 5043. Public Health And The Physician. Credit Hours.**

The purpose of this course is to provide a basic understanding of some of the important health issues faced by modern physicians. Each hour of this survey course covers a different public health topic. Half of the class hours will be discussion and education on reading assignments of public health topics. Guest speakers from the university and San Antonio will complement lecture and discussion.

**ELEC 5044. Enrichment Elective In Interprofessional Community Service Learning. Credit Hours.**

This innovative inter-professional community service learning (CSL) course, offered in partnership with the UT School of Pharmacy, PHR 270S, to allow medical students to integrate meaningful community service with instruction, preparation, and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities. Students will have the opportunity to examine social justice and social determinant of health issues and apply these principles in a structured service learning practicum. The student-led service learning project will address the social and health needs of a community partner and will be conducted with a partner agency in a culturally competent manner. Through online learning modules, readings and discussion; monthly class sessions; a group service learning project; and a structured service learning practicum, this course combines community service with preparation and reflection to help foster civic responsibility in the health professions. Open for Cross Enrollment on Space Available basis.

**ELEC 5045. Clinical Knowledge And Surgical Skills. Credit Hours.**

This elective is for second-year medical students who wish to gain extra insight and experience with the basic skills required for third-year clerkships. The goals of this course are to ease the student's "fear of the unknown" when they first start their surgery clerkship and to improve the educational experience by giving students the framework on which to learn, allowing them to hit the ground running on day one of the surgery clerkship. The course consists of all lectures (case presentations, didactic sessions, student/resident panel) in ELEC 5046 and in addition will include the technical skills sessions.

**ELEC 5046. Clinical Knowledge For The Surgical Clerkships. Credit Hours.**

This elective is for second-year medical students who wish to gain extra insight to the third-year clerkships. The goals of this course are to ease the student's "fear of the unknown" when they first start their surgery clerkship and to improve the educational experience by giving students the framework on which to learn, allowing them to hit the ground running on day one of the surgery clerkship. The course consists of surgery case presentations, didactic sessions, and a student and resident panel. The course is similar to ELEC 5045 but does NOT include the technical skills sessions.

**ELEC 5048. Enrichment Elective in Art. Credit Hours.**

This is an interactive, interprofessional course that takes students to the McNay Art Museum to learn physical observation skills. Studies demonstrate that increased observational skills translate to improved physical examination skills. Using artwork as patients, students will have the opportunity to learn how to observe details and how to interpret images based on available evidence. Taught jointly by Health Science Center faculty and McNay museum educators, students will have the opportunity to develop and hone their observation, problem solving, and assessment skills. They will also observe, interpret, and give case reports on the original works of art to teach them the skill of verbalizing descriptions of what is seen, and not to accept assumptions made with a first impression. Open for Cross Enrollment on Space Available basis.

**ELEC 5049. Health, Human Rights and the Physician. Credit Hours.**

This is a survey course in which each hour covers a different Health and Human Rights topic. The course is designed to present an understanding of what are human rights and what human rights issues are relevant to the practice of medicine and delivery of appropriate healthcare. Students will have the opportunity to gain a better understanding of the ever increasingly apparent global problems that exist. This course aims to better equip students to address these relevant health and human rights issues as future physicians.

**ELEC 5051. Applied Neuroanatomy. Credit Hours.**

This course is aimed at students and faculty who are interested in understanding applied neurosensory pathways. The purpose of the course is to reinforce the neurosensory material in the MSI Neuroanatomy course by applying the material to real world situations via interactive activities and clinical vignettes. Additionally, this course would allow students to use different types of art media to express themselves as they learn the material through different types of art media. The course content and schedule is constructed to correspond with the material and schedule of the MSI Neuroanatomy course. This elective will explore four neurosensory modalities: proprioception/balance, vision, auditory and taste/olfaction. Each modality will be covered in one two-hour class session that will be comprised of a lecture component and its corresponding laboratory component. The course will be open to 15 students.

**ELEC 5052. Healthcare Practice and The Business Of Medicine. Credit Hours.**

This elective will complement the spring Health Care Reform Forum, which focuses in-depth on issues related to the cost of care and healthcare forum, primary care and access, and graduate medical education.

**ELEC 5053. Healthcare Reform Forum. Credit Hours.**

The Healthcare Reform Forum is a springtime introductory-level elective on topics related to healthcare reform. The elective consists of a series of scheduled discussions on current topics in healthcare policy.

**ELEC 5054. Introduction to Culinary Nutrition. Credit Hours.**

Introduction to Culinary Nutrition is a medical student enrichment elective that provides the foundation for learning the principles of culinary nutrition and its role in optimizing health and wellness for the physician as a healer as well as encouraging physicians to serve as role models and educators of their patients. Intro to Culinary Nutrition is an enrichment elective, set in a state of the art kitchen theater in a downtown Culinary Academy and is taught by chefs trained in culinary nutrition and facilitated by your peers who have successfully completed the course and faculty dedicated to the practical application of nutrition in physician and patient wellness. The culinary medicine elective is a series of eight dynamic hands-on cooking experiences and will meet on various afternoons throughout each semester. Patterned after Tulane University School of Medicine's groundbreaking course, the elective aims to teach medical students about nutrition in a new way through one-on-one coaching and interactive cooking so that they can embrace a healthy lifestyle themselves while helping their patients and peers to do the same.

**ELEC 5055. Issues in Women's Healthcare. Credit Hours.**

A comprehensive introduction to Women's Health, with an emphasis on topics that are not covered in preclinical curriculum. This course is an enriching supplement to medical school education. It will empower future doctors in any specialty to consider female patients in the context of their unique body processes, and potentially catch symptoms of various health problems early. Lectures will be given throughout the semester. Faculty and local experts in the fields under discussion will be our guest lecturers.

**ELEC 5057. Global Health Longitudinal Elective. Credit Hours.**

Student demand to learn about global health and participate in global health service learning at the School of Medicine continues to grow every year. To date, the Center for Medical Humanities & Ethics has met this demand successfully. However, students who complete the Longitudinal Global Health elective (ELEC 5047) in their first year are now requesting the opportunity to continue their education in global health and engagement with global health service learning. These experienced students play an important role on subsequent trips as they serve as peer mentors and trip coordinators, improving the overall quality of the services our teams provide abroad. As a result, we are requesting the creation of a new Global Health Longitudinal Elective, specifically for second year medical students who have previously completed ELEC 5047. The Center has set a precedent for offering another elective course for students wishing to participate in the Literature in Medicine course a second time, by offering the course to both second year (ELEC 5038-5039) and fourth year (MEDI 7004) medical students. This proposed elective will utilize a community service learning model, in which preparation, mentorship, evaluation, reflection and reporting are essential in meeting the expressed need of a particular community. The elective will also provide a foundation of practical knowledge in global health and will optimize the students' overseas experiences, maximize the safety of their travel, facilitate their adaptation to working in different cultural settings, and maximize their impact in the communities where they serve. The course material will be presented through a variety of approaches, including lectures, small group case discussions, optional laboratory sessions, practical workshops, and online learning modules. Prerequisites: ELEC 5047.

**ELEC 5106. Intermediate Medical Spanish. Credit Hours.**

This course is designed to offer first- and second-year medical students the opportunity to acquire important skills to communicate with Spanish-speaking only patients in a culturally sensitive environment. This class is restricted to students who have an intermediate level of written and conversational Spanish and/or have reached at least a Beginner level.

**ELEC 5206. Advanced Medical Spanish. Credit Hours.**

This course is designed to provide students with the specific medical vocabulary and terminology necessary to communicate with and help treat Latino patients with limited English proficiency. This class is restricted to students who have a previous knowledge of the Spanish language and have reached at least a conversational level. The course will include specific vocabulary groups relating to assessment and care of patients, vocabulary to establish rapport, and discussions leading to cultural competencies. Students will have the opportunity to ask questions and provide answers in common medical situations in Spanish, conduct patient interviews, write medical histories, learn how to conduct physical exams in Spanish, and discuss readings related to the field.

**ELEC 6067. Fundamentals of Neuroethics. Credit Hours.**

Recent advances in neuroscience have considerably improved our understanding of brain function. However, the fascinating examination of brain's mysteries often intersects with the concerns of ethics and public policy. This course aims at presenting and discussing philosophical and scientific perspectives on major bioethical issues pertinent to neuroscience research. Several subjects will be covered in the course, including the effects of pharmacological and surgical interventions on the brain/min binomial, therapy versus enhancement, brain imaging and mental privacy, neurobiology of decision making, consciousness, unconsciousness, and death.

## FAPR Courses

### **FAPR 4008. Research in Family Medicine in San Antonio or Harlingen. 4 Credit Hours.**

At least 8 weeks before the elective's starting date the student must submit a completed course approval form and a written document that includes: the research topic; a printed literature search on that topic; readings on research design and/or statistical analysis that will be read as part of the course activities; the dates and times and locations of meetings between the student and the faculty member; expected course outcomes (e.g. presentations); and a signed statement from Dr. Sandra Burger (SA) or Dr. Adela Valdez (the RAHC) saying she will mentor and work with the student on the project.

### **FAPR 4074. Rural Clinical Experience in Family Medicine (AHEC). 4 Credit Hours.**

The Department of Family and Community Medicine (DFCM) and the South Central Area Health Education Center (AHEC) at the UT Health Science Center at San Antonio collaborate to provide fourth year medical students strong primary care training at various rural AHEC clinical training sites in South Texas. The experience occurs primarily in ambulatory settings, but may include inpatient experiences with physicians who follow their patients in hospital settings. The student, under the direct supervision of a physician certified by the American Board of Family Medicine, evaluates and manages a wide array of medical problems. The student also gains experience in preventing common disorders and medical problems and works with other health professionals to better understand the health care needs of and services available to patients in rural settings. All paperwork must be submitted to the Department of Family and Community Medicine at least 10 working days prior to the start of the course.

### **FAPR 4101. Complementary & Alternative Medicine on US/Mexico Border. 0.5 Credit Hours.**

Course is designed to enable fourth year medical students to problem-solve common situations where allopathic and alternative medicine interface. Students will meet twice a week for 4 weeks, for one hour, with the instructor. The instructor will teach the students about complementary and alternative medicine practices on the US/Mexico border. The students will be asked to review case vignettes to discuss these practices and how they would deal with certain common situations where alternative medicine interfaces with allopathic medicine. These discussions may lead to ethical and medicolegal issues.

### **FAPR 4103. Women's Health Seminar. 0.5 Credit Hours.**

The students will meet once a week for 5 weeks for two hour, with the course instructor. The instructor will present women patient case vignettes and lead a discussion of the case. The students will then be asked to read medical literature in regarding women's health issues. The case vignettes will be in the one of six health disparities (Diabetes, Cardiovascular Disease, Cancer, HIV/AIDS, Infant Mortality and Childhood and Adult Immunizations).

### **FAPR 4201. Practice Management-RAHC. 0.5 Credit Hours.**

This course will cover Medical Office Management issues. Topics will include Medical Insurance, Coding ICD-9 & CPT-4, Medical Insurance Billing, Computerized Medical Office Software(s), 3rd party payments, contractual issues and other related topics. This course will be beneficial to those medical students in preparation for internship and future office practice.

### **FAPR 4202. Dermatology: A Short Review Course. 0.5 Credit Hours.**

This 8-hour dermatology course will follow the American Academy of Family Practice (AAFP) board dermatology curriculum and will include the following topics: basic components of dermatology and common dermatologic problems, as well as common skin cancers. This is a Family Medicine MS4 didactic elective for Harlingen.

### **FAPR 4203. Review of Evidence-Based Medicine. 0.5 Credit Hours.**

This course aims to provide medical students with a set of evidence-based exercises relating to diagnosis, prognosis, therapy, and harm. Students will be asked to formulate clinical questions so that they can be answered, to search for information, to critically appraise the evidence for validity and clinical importance, and apply the evidence in clinical practice. This is an MS4 didactic elective for Harlingen.

## INTD Courses

### **INTD 1091. Independent Study. 4 Credit Hours.**

Students will work directly with a faculty advisor or assistant dean to develop an independent plan of study.

### **INTD 3001. International Elective. Credit Hours.**

Students will work with the course director and Assistant Director of Global Health to identify an appropriate international elective site, using established sites/programs or one that the student discovers on their own. All rotations must be vetted and approved by the course director and will adhere to a community service-learning model that is a structured educational experience combining community service with preparation and reflection. Students are expected to help shape the learning experience around community-identified needs and advance insight related to the context in which service is provided, the connection between service and academic coursework, and students' roles as citizens and professionals. Students will spend 4 weeks living and working at an international service site. Sites may allow for a range of experiences, such as participating in patient care, conducting clinical or public health research, and/or participating in a language immersion program. There may also be opportunities for patient education and emphasis on efforts of local empowerment, aiming to build up the communities in a sustainable way. Regardless of the focus, all sites must be supervised by qualified health care providers. Students are encouraged to integrate themselves into the health care delivery system, to explore community needs that they could address, and when possible, to strive to make an impact through community education, home visits, and research. Reflection essays serve as a way to process experiences, including clinical cases, new perspectives gained, and analysis of health care disparities, and strategies for the overcoming poverty-related health problems. Students are encouraged to share their experiences upon return through a formal presentation.

### **INTD 3002. School of Medicine Research Elective. Credit Hours.**

Students will participate in basic or clinical research projects under the supervision of university faculty. The goal of this elective is to immerse students in a rich research environment and provide an opportunity to work with research mentors to fully engage in the research process from writing the proposal to collecting the data to disseminating research results. This elective is open to students who already have an established working relationship with a faculty member and who wish time to continue their work, students who wish to establish a new project, and for students who are in the MD-MPH degree program and MD with Distinction in Research Program. Interested students must contact the course director prior to the enrollment date to express interest in the elective and receive further instructions on the application process for the research and identification/ confirmation of the faculty mentor.

**INTD 3030. Clinical Foundations. 3 Credit Hours.**

The purposes of this course are to 1) Prepare students to excel as learners in clinical settings by providing foundations for clinical skills including finding information, presenting cases, charting, writing orders, completing other paperwork, and clinical reasoning including basic EKG and radiograph interpretation; 2) Assist students in developing new skills expected of third-year clerks including lab skills (phlebotomy, ABG, blood cultures, hemocult cards), IV insertion, PPD placement, sterile gowning/ gloving, basic suturing, nasogastric tube placement, O2 management, and Basic Cardiac Life Support; and 3) Prepare students for their new roles in clinical settings, where they encounter patient care responsibilities along with patient privacy and ethical issues. Successful completion of the first two years of Medical School and approval of the director of the MD/PhD program are required.

**INTD 3058. Hospice and Palliative Medicine. Credit Hours.**

This rotation offers clinical experience in Hospice and Palliative Medicine (HPM). Palliative care provides treatment for seriously ill hospitalized and ambulatory patients and focuses on symptom management, enhancement of function, physical comfort, quality of life, psychosocial support, and communication about the goals of medical care for the patients as well as their families.

**INTD 3091. Independent Study. 9 Credit Hours.**

Students will work directly with a faculty advisor or assistant dean to develop an independent plan of study.

**INTD 4007. Interprofessional Community Service Learning. 2 Credit Hours.**

This is an innovative interdisciplinary service learning (CSL) course offered in partnership with the UT School of Pharmacy, PHR 270S, to allow medical students to integrate meaningful community service with instruction, preparation, and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities. This course will provide the opportunity for students to examine social justice and social determinant of health issues and apply these principles in a structured serviced learning practicum. The student-led service learning project will address the social and health needs of a community partner and will be conducted with the partner agency in a culturally competent manner. Through online learning modules, readings, and discussion; monthly class sessions; a group service learning project; and a structured service learning practicum, this course combines community service with preparation and reflection to foster civic responsibility in the health professions. Open for Cross Enrollment on Space Available basis.

**INTD 4008. Interprofessional Care in HIV. 0.5 Credit Hours.**

Students will have the opportunity to learn how to function as a member of an interprofessional team in HIV case management. The objective is for students to become familiar with issues of patient safety, health literacy, medication reconciliation, and interprofessional teamwork in HIV care. This is an elective didactic course. This is an elective didactic course.

**INTD 4009. Interprofessional Care in HIV. 2 Credit Hours.**

Students will have the opportunity to learn how to function as a member of an interprofessional team in HIV case management, and become familiar with issues of: patient safety, health literacy, medication reconciliation, treatment guidelines, and interprofessional teamwork in HIV care.

**INTD 4015. Humanism in Medicine Fellowship. 2 Credit Hours.**

This is a longitudinal 4th-year elective to support and nourish the inherent altruism of our students. This elective will bring together like-minded students and faculty who have a passion for caring for the medically underserved in their communities. The students will take a leadership role in managing and directing the student-run clinics at the Alpha Home, SAMP Transitional Living and Learning Center, Haven for Hope, Travis Park Dermatology (under faculty supervision). Clinical experiences will be at these clinics. This elective will include a few evening seminars throughout the year in which students and faculty meet to discuss social justice, how to start a free clinic, homelessness and topics chosen by the students. Every student will complete a project of their choice over the year.

**INTD 4018. Independent Elective in Ethics. 2 Credit Hours.**

In this longitudinal course, students will be required to undertake an independent study into a specific issue in medical ethics or medical humanities. Students will be required to read on research methods in medical ethics as well as literature in their issue of interest, and then to propose and conduct an original study project, a literature review, a position paper, or an ethical analysis of a particular topic or case. Students will be expected to write an academically rigorous final research report of 10 to 15 pages. Students will be encouraged to produce a final paper that can be submitted for publication in a peer-reviewed bioethics or medical humanities journal. Students will be required to meet with the instructor and/or chosen faculty advisor over the course for assistance, guidance, and discussion. (Center for Medical Humanities and Ethics).

**INTD 4019. Clinical Ethics. 2 Credit Hours.**

Students in this two-week course will have the opportunity to focus on work in clinical ethics consultation. The student will be required to participate in rounds as an ethicist, do in-depth reading on clinical ethics consultation, observe clinical ethics consults, attend ethics committee meetings, and provide an educational seminar to hospital staff on an issue of ethical significance.

**INTD 4025. Healthcare Practice and Policy Elective. 0.5 Credit Hours.**

The Healthcare Practice Elective is an introductory-level, discussion-based, eight-hour course targeted to fourth-year medical students. The course focuses generally on practice and policy issues of payment methodologies, cost-effectiveness, and access to care.

**INTD 4030. Preparing for Global Health Work. 2 Credit Hours.**

This is a 2-week multidisciplinary course for 4th-year medical students who are planning future global health experiences, arising in response to enormous interest in international medicine, with increasing numbers of students choosing to spend time overseas during medical school. This preparatory course aims to provide a foundation of practical knowledge in global health to optimize the students' overseas experiences, facilitate their adaptation to working in different cultural settings, and maximize their impact in the communities where they serve. Topics include chronic and infectious disease, parasite infection, prioritizing community resources, health disparities, ethical dilemmas, cultural awareness, and professionalism. Course material is presented through a variety of approaches, including lectures, small-group case discussions, laboratory sessions, and online learning modules.

**INTD 4045. Patient Notes- Enrichment Elective. Credit Hours.**

It is an interactive, inter-professional course that engages students in music listening sessions to teach students active listening skills. Through various forms of music, students will learn how to actively listen for specific details to gain insight on meaning, become comfortable with ambiguity and interpretation, and develop pattern recognition skills to quickly recognize deviation. Students will also develop stronger methodology for writing patients notes through conceptual practice of SOAP format notes for music pieces. Taught jointly by UTHSCSA faculty and professional musicians, this strategy of applying practical skills to an abstract concept such as music will refine these skills for students in clinical settings. Specifically, this course aims to improve interpersonal communication skills, and organizational note writing. This is also an opportunity for students to practice problems solving with other healthcare professionals.

**INTD 4048. Art Rounds. 2 Credit Hours.**

This is an interactive, interprofessional course that takes students to the McNay Art Museum to learn physical observation skills. Studies demonstrate that increased observational skills translate to improved physical examination skills. Using artwork as patients, students will have the opportunity to learn how to observe details and how to interpret images based on available evidence. Taught jointly by Health Science Center faculty and McNay museum educators, students will have the opportunity to develop and hone their observation, problem solving, and assessment skills. They will also observe, interpret, and give case reports on the original works of art to teach them the skill of verbalizing descriptions of what is seen, and not to accept assumptions made with a first impression. Open for Cross Enrollment on Space Available basis.

**INTD 4058. Hospice and Palliative Medicine Elective. 4 Credit Hours.**

This rotation offers clinical experience in Hospice and Palliative Medicine (HPM). Palliative care provides treatment for seriously ill hospitalized and ambulatory patients and focuses on symptom management, enhancement of function, physical comfort, quality of life, psychosocial support, and communication about the goals of medical care for the patients as well as their families.

**INTD 4103. Communication Skills. 0.5 Credit Hours.**

To introduce fourth year medical students to the principles of conducting public interviews, presentations and effectively disseminating information to the communities they will serve.

**INTD 4104. Improving Patient Outcomes. 0.5 Credit Hours.**

This course is designed to increase a student's knowledge of and skills in identifying systemic problems with health care delivery and patient safety, collecting and analyzing data, generating solutions, presenting results and evaluating peers. The course objectives include facilitating systems thinking, exposing students to the ACGME general competencies (with emphasis on practice-based learning and improvement and systems-based practice), increasing understanding of health care economics and working in teams.

**INTD 4105. Medical Jurisprudence. 0.5 Credit Hours.**

The course will center on the Texas Medical Practice Act and applicable federal laws.

**INTD 4106. Practical Ethics For Healers. 0.5 Credit Hours.**

The course is the capstone of the four-year longitudinal curriculum in humanities and ethics. The goals are to reflect upon 1) physician's values, attitudes, and their intersection with cultural values and attitudes; 2) the historical and moral traditions of medicine in the context of society, politics, spirituality, and the health care system; and 3) the personal identity of a doctor. Open for Cross Enrollment on Space Available basis.

**INTD 4107. The Skin Around Us: A View of Skin Disease from a Humanities Perspective. 4 Credit Hours.**

This elective is for fourth year medical students with a special interest in learning about skin diseases through a humanities perspective. Throughout the four week course, students will attend daily clinics, create a project and write an essay on activities encountered during the elective. The students will also complete brief writing assignments each week after watching videos, movies, and/or reading books.

**INTD 4110. Getting Ready to Teach During Your Residency Program. 0.5 Credit Hours.**

The goal of this 8-hour course is to help senior medical students, who will be residents in a few months, develop teaching skills that will enhance the quality of their interactions with students. The course will be conducted in an interactive workshop format to allow participants to practice important teaching skills for residents. These include 1) orienting and priming students to their responsibilities and roles and accepting the personal role of teacher and role model, 2) giving feedback to improve student performance, 3) helping students to improve their patient presentations-the use of questioning, and 4) coaching procedural and technical skills. The participants will practice these skills and receive feedback from their course peers and instructors based on the guidelines for clinical teachers in action with students and provide critiques. Large and small group discussions and role plays will be used to reinforce teaching principles.

**INTD 4201. Getting Ready To Teach During Your Residency-RAHC. 0.5 Credit Hours.**

The goal of this course is to help senior medical students, who will be residents in a few months, develop teaching skills that will enhance the quality of their interactions with medical students. The course addresses four important residents' teaching skills: (1), teaching learners with different learning styles, (2) providing constructive feedback, (3), teaching at the bedside, and (4) teaching psychomotor procedures.

**INTD 4205. Veritas Mentors in Medicine Longitudinal Elective. 2 Credit Hours.**

This is longitudinal elective and the course work requirements will be for 2 week credit and must be complete by March 1st. Evaluation of MiM performance will include feedback from faculty mentors and students.



**INTD 4210. School of Medicine Research Elective Level 1. 4 Credit Hours.**

Medical research is multidisciplinary and broad in scope. Students will participate in basic, clinical research, quality improvement, or patient safety research projects under the supervision of faculty in the Health Science Center. The goal of this elective is to immerse students in a rich scholarly environment and provide an opportunity to work with research/faculty mentors to fully engage in a scholarly research process from writing the proposal to collecting the data to disseminating results. This elective is open to students who already have an established working relationship with a faculty member and who wish time to continue their work, students who wish to establish a new project, and for students who are in the MD-MPH degree program and MD with Distinction in Research Program. Interested students must submit a research elective application which includes the faculty mentor the student will work, to the office of UME, no later than 12 weeks before the research elective is to begin. Applications will be reviewed and confirmed or declined no later than 8 weeks prior to the proposed start date of the elective. Students will be able to 1) Formulate a research question and identify a research methodology to answer that question; 2) understand research ethics and apply an ethical approach to research design, implementation, and dissemination 3) design a research study and gather quality data; 4) apply and interpret basic biostatistics relevant to the individual research project; 5) write scientific reports. The supervising faculty member will evaluate the performance of the student using a standard, research specific, medical student evaluation form. Students will receive a Pass or Fail summative grade at the conclusion of the 4 week elective. Faculty will be expected to give the student formative feedback after two weeks to assist the student in meeting all expectations to pass the elective.

**INTD 4211. School of Medicine Research Elective Level 2. 4 Credit Hours.**

Medical research is multidisciplinary and broad in scope. Students will participate in basic, clinical research, quality improvement, or patient safety research projects under the supervision of faculty in the Health Science Center. The goal of this elective is to immerse students in a rich scholarly environment and provide an opportunity to work with research/faculty mentors to fully engage in a scholarly research process from writing the proposal to collecting the data to disseminating results. This elective is open to students who already have an established working relationship with a faculty member and reflects their increasing experience with the research process. INTD 4210 Level 1 elective or evidence of past experience knowledge and/or skills is a prerequisite. The expectation is that enrolled students will continue with research experiences begun in INTD 4210 Level 1 including students pursuing the MD-MPH degree and MD with Distinction in Research. Interested students must submit a research elective application which includes the faculty mentor the student will work, to the office of UME, no later than 12 weeks before the research elective is to begin. Applications will be reviewed and confirmed or declined no later than 8 weeks prior to the proposed start date of the elective.

**INTD 4212. School of Medicine Research Elective Level 3. 4 Credit Hours.**

Medical research is multidisciplinary and broad in scope. Students will participate in basic, clinical research, quality improvement, or patient safety research projects under the supervision of faculty in the Health Science Center. The goal of this elective is to immerse students in a rich scholarly environment and provide an opportunity to work with research/faculty mentors to fully engage in a scholarly research process from writing the proposal to collecting the data to disseminating results. Students enrolled in this course will have prior experience with research and ongoing research activities. As such, this elective is open to students who already have an established working relationship with a faculty member and reflects their increasing experience with the research process. INTD 4211 Level 2 elective is a prerequisite. As with INTD 4211 Level 2, the expectation is that enrolled students will continue with research experiences begun in INTD 4210 Level 1 and INTD 4211 Level 2 including students pursuing the MD-MPH degree and MD with Distinction in Research or produce evidence of past experience knowledge and/or skills which are deemed equivalent to these prerequisites. Interested students must submit a research elective application which includes the faculty mentor the student will work, to the office of UME, no later than 12 weeks before the research elective is to begin. Applications will be reviewed and confirmed or declined no later than 8 weeks prior to the proposed start date of the elective. Students will be able to formulate a research question and identify a research methodology to answer that question; understand research ethics and apply an ethical approach to research design, implementation, and dissemination; design a research study and gather quality data; apply and interpret basic biostatistics relevant to the individual research project; write scientific reports. The supervising faculty member will evaluate the performance of the student using a standard, research specific, medical student evaluation form. Students will receive a Pass or Fail summative grade at the conclusion of the 4 week elective. Faculty will be expected to give the student formative feedback after two weeks to assist the student in meeting all expectations to pass the elective.

**INTD 5005. Core Course 1: Biochemistry. 2 Credit Hours.**

Topics to be covered include: protein structure; properties of enzymes; structure, biosynthesis, and function of lipids; pathways and regulation of carbohydrate metabolism and biosynthesis and regulation of amino acids, nucleotides, and related compounds. Prerequisites: consent of instructor.

**INTD 5007. Advanced Cellular And Molecular Biology. 4 Credit Hours.**

This course provides an in-depth learning experience that instructs students on the fundamentals of molecular biology and cell biology as well as prepares the student to evaluate and design new research in the cutting-edge areas of modern molecular biology and cell biology. The course combines a didactic program of lectures along with a small group discussion format in which students interact closely with a group of faculty who have active research programs. The course focuses on active areas of research in molecular biology: Chromatin structure, DNA Transcription, DNA Replication and Repair, Recombination, RNA processing and regulation, Protein processing, targeting and degradation and in cell biology: Cell Signaling and Communication, Cell Growth, and Cell Death. Each week, the faculty provide students with didactic lectures on a current research area. Students and faculty will then jointly discuss key publications that serve to bridge the gap between the fundamental underpinnings of the field and the state of the art in that area.

**INTD 5013. Perio/Pros/Endo/Orth Interdisciplinary Course 1. 1 Credit Hour.**

A seminar that brings together the residents and graduate staff from the periodontic, prosthodontic, endodontic and orthodontic postdoctoral programs to share clinically relevant multidisciplinary information. Patient diagnostic evaluations and treatment plans are evaluated in an interactive environment. Selected topics involving new advancements are presented and discussed.

**INTD 5020. Dental Biomed Core 1. 4 Credit Hours.**

The Biomedical Core Course will provide a multidisciplinary approach to basic science instruction as it relates to the clinical practice of dentistry. Both basic science and clinical science faculty will participate to provide a sound base of material required by each program. Individual programs will supplement the Biomedical Core Course in the basic science areas particular to that discipline. This combination of core instruction with individual supplementation should provide the advanced education student the appropriate background in biomedical science.

**INTD 5021. Dental Biomed Core 2. 1 Credit Hour.**

This course is a continuation of MSDS 5020 Dental Biomedical Core Course 1.

**INTD 5023. Research Ethics. 1 Credit Hour.**

The goal of this course is to provide the Master's student an opportunity to gain the essential standards necessary for training and education approved by the National Institute of Health. This course links to the web-based NIH Clinical Research Training On-Line Course <http://www.cc.nih.gov/training/training/crt/infor.html> for Principal Investigators that is required for all individuals conducting research. This course is open to current Health Science Center students. Open for Cross Enrollment on Space Available basis.

**INTD 5030. Introduction To Patient Care. 5 Credit Hours.**

The first component of this course is an informatics module so that students become familiar with their new computers and are trained on specific software. In the second and overlapping component, students are assigned to a variety of small-group rotations in a clinical setting to prepare them for patient-care activities. In the first semester, the students are required to become certified in basic life support. They also are required to rotate through a clinic orientation that is followed by a rotation as an assistant in the General Practice Groups. They are expected to follow proper infection control protocol and utilize some basic assisting skills. They also are required to rotate through a head and neck exam activity, followed with a patient activity in the second semester. Second semester activities also include intraoral radiography technique, a clinic component of their periodontics, and school-based prevention courses, a sealant lab and clinic, and radiographic interpretation. Students are evaluated primarily on professional development expectations.

**INTD 5035. University Teaching Excellence Course. 2 Credit Hours.**

The course is designed for post-doctoral fellows, senior graduate students, faculty members, research staff and residents who are interested in a career in teaching and desire to acquire knowledge about learning processes and to develop educational planning, teaching and assessment skills to enhance their teaching toolkit. UTEC participants practice key skills needed for success in college-level teaching, working individually and in teams to accomplish course objectives. Classes will be supplemented by readings, worksheets and self-assessment inventories. Although the course will provide instruction in contemporary pedagogic techniques, it primarily emphasizes teaching science courses for undergraduates on campuses at predominantly undergraduate institutions (PUIs), rather than teaching graduate students and medical / dental students at the health science center (HSC) or other academic HSCs. Course instructors include faculty from the Schools of Medicine, Dentistry and Nursing at UTHSCSA as well as visiting faculty from local PUIs, St. Mary's University and Our Lady of the Lake University. UTEC has been offered for two consecutive fall semesters now (2015 and 2016). It is sponsored by the San Antonio Biomedical Education and Research (SABER) Program that is supported by an Institutional Research and Academic Career Development Award (IRACDA) from the National Institute of General Medical Sciences of the NIH (PHS grant, K12 GM11726).

**INTD 5040. Fundamentals Of Neuroscience 1: Molecular, Cellular, & Developmental Neuroscience. 2 Credit Hours.**

This course is intended to introduce students to a broad survey of the basics of molecular, cellular and developmental neuroscience. The course is organized into a series of three modules: biochemical and cellular properties of nervous system cells, development of neuronal systems, and neurotransmission and neuromodulation, which covers the fundamentals of these three areas. Current topics and concepts are discussed in discussion sessions that include student participation. Two components; Neuroscience students register for both PHYL 5041 and INTD 5040.

**INTD 5043. Fundamentals Of Neuroscience 2: Systems Neuroscience. 3 Credit Hours.**

This course, the second component of our broad survey of the basics of neuroscience, begins at the level of the neural circuit, and guides the students through an understanding of increasingly complex levels of organization and function in the brain. Topics include neurotransmitter systems, sensory and motor function, motivated behavior, regulation and integration of autonomic, behavioral, and emotional responses in the limbic system, higher order cognitive processes, and the neurobiological basis underlying some important psychiatric disorders and their treatment.

**INTD 5046. Metanalysis In Cognitive Neuroimaging. 2.5 Credit Hours.**

The objective of this course is to familiarize students with human functional brain imaging methods, experimental designs, statistical analyses, inferential strategies, and content. Students are guided through a literature-based research project that culminates in a quantitative metanalysis of a set of studies using similar tasks.

**INTD 5047. Neuroanatomy. 2 Credit Hours.**

The purpose of this course is to provide students with a practical working knowledge of the structure of both the peripheral and central nervous system. The emphasis will be on the organization of the human brain, although the brains of other species may also be included if appropriate for a specific brain region. The course will look at each of the individual components of the central nervous system in some depth but will also emphasize the complex integration of these various components into a functional brain. The topics covered in the course are specifically designed to mesh in time with those covered in Fundamentals of Neuroscience 2 describing the function of these areas. For this reason, it would be best if these two courses were taken concomitantly. The course will be didactic with digital images, models, and wet specimens included in the course.

**INTD 5051. Research Methodology and Evidence-Based Practice. 2 Credit Hours.**

This course is designed to introduce dental residents and faculty to critical thinking, research methodology, and evidence-based practice skills.

**INTD 5064. Applied Statistics for Health Care Practitioners. 3 Credit Hours.**

This online course focuses on the application of descriptive and inferential statistics in research studies. Students are expected to gain knowledge and skills that will enable them to understand, interpret, and evaluate statistical results; work with a consultant statistician; and use software to enter, analyze, and summarize data. Course requirements include homework assignments, online discussions and/or chats, and periodic projects.

**INTD 5066. Laughter is the Best Medicine: An Interdisciplinary Elective about Humor, Healing, and Healthcare. 1 Credit Hour.**

This class is a serious look at humor! The physiological and psychological benefits of humor, as well as its therapeutic use with patient interactions, will be explored. Students will learn how to develop and improve their personal use of humor to combat burn out, through techniques to enhance coping skills and stress reduction. Student participation and interaction is integral to the content delivery.

**INTD 5067. Introduction To Bioinformatics And Computational Biology. 2 Credit Hours.**

The course will be taught by faculty from Biochemistry, Cellular & Structural Biology, CCRI, Periodontics, and faculty from UTSA. The course will be an introduction to methods and tools for working with DNA sequences and protein families, learning basic Unix networking, overview of numerical modeling, systems biology approaches to complex diseases, gene expression analysis, bioinformatics in clinical research, statistical tools for complex datasets, proteomics, structural methods for protein biology, cheminformatics, molecular modeling, and mathematical model building.

**INTD 5074. Topics In Translational Medical Product Development. 1 Credit Hour.**

It is crucial to understand the intricate process of translating basic research into market driven products, navigate the complex pathways of intellectual property management and the regulatory affairs of agencies such as the FDA. This course will offer students in biomedical sciences the opportunity to integrate industry-relevant training and experience with their basic science education. The course will explore the marketing and regulatory process by which a biomedical product is developed and brought to commercialization.

**INTD 5075. Complementary Healthcare for the Clinician. Credit Hours.**

The goal of this elective is to introduce future doctors to practices outside of the classical medical school curriculum that promote an evidence-based approach to wellness. This is so that the medical students of the UTHSC School of Medicine are informed about the reality, evidence and rumor surrounding a variety of commonly used alternative and supplementary healthcare practices. The of this class is not to make the student an expert in areas such as acupuncture or yoga, but to be well informed of the role of such practices as it relates to patient treatment and wellness. To this end, all the classes will have a practical component which will allow the students to experience the alternative modalities in a structured setting.

**INTD 5081. Topics In Cardiovascular Research. 1 Credit Hour.**

This course is designed to familiarize students with the current literature related to cardiovascular disease. Each week a different research topic selected from the recent literature is presented and discussed. Students are expected to attend and participate in the discussions. In addition, students are required to prepare and present once during the semester. A list of previous and current course presentations will be available online.

**INTD 5082. Responsible Conduct of Research. 1.5 Credit Hour.**

This foundational course introduces students to core ethical content necessary for responsible research conduct. Through interactive seminars, students will learn about (1) scientists as responsible members of society (contemporary ethical issues in biomedical research and environmental/social impacts of research), (2) policies for research with human subjects and vertebrate animals, (3) collaborative research, (4) conflicts of interest (personal, professional, financial), (5) data acquisition and laboratory tools (management, sharing, ownership), (6) responsible authorship and publication, (7) mentor/trainee responsibilities and relationships, (8) peer review, and (9) research misconduct (forms of misconduct and management policies).

**INTD 5091. Special Topics. 1-4 Credit Hours.**

This is a placeholder course, for which graduate students may register, if they are unable to select a specific track core course at the time of registration. Tracks are: Biology of Aging, Cancer Biology; Cell and Molecular Biology; Genetics, Genomics, & Development; Membrane Biology & Cell Signaling; Metabolism & Metabolic Disorders; Microbiology & Immunology; Molecular Biophysics & Biochemistry; Molecular, Cellular, & Integrative Physiology; Neuroscience; and Pharmacology. The course may be repeated for credit.

**INTD 5094. Independent Study. 1-4 Credit Hours.**

This elective allows for detailed in-depth study in a specific area of study. The area and mode of study are to be agreed upon by the student and instructor. The course may be repeated for credit when the area of study varies. Clock hours are to be arranged. Prerequisites: Graduate standing and consent of instructor.

**INTD 6002. Ethics In Research. 0.5 Credit Hours.**

This course covers topics relevant to ethics in scientific research. The course is taught on a case-study basis, dealing with real and hypothetical situations relevant to the conduct of scientific research. Topics discussed will include, but will not be limited to: data management, peer review, recognizing scientific misconduct, authorship, and The University of Texas regulations relevant to human and animal research. This course is required of all doctoral graduate students.

**INTD 6007. Advanced Cell Biology. 2 Credit Hours.**

This course provides an in-depth learning experience that instructs students on the fundamentals of cell biology as well as prepares the student to evaluate and design new research in the cutting-edge areas of modern cell biology. The course combines a didactic program of lectures along with a small-group discussion format in which students interact closely with a group of faculty who have active research programs. The course focuses on active areas of research in cell biology: Cell Signaling and Communication, Cell Growth, and Cell Death. Each week, the faculty the jointly discuss key publications that serve the bridge the gap between the fundamental underpinnings of the field and the state of the art in that area. Students and faculty will then jointly discuss key publications that serve to bridge the gap between the fundamental underpinnings of the field and the state of the art in that area.

**INTD 6008. Mitochondria & Apoptosis. 1 Credit Hour.**

This course will focus in depth on Mitochondria and Apoptosis. Topics will include: Mitochondria and Respiration; Mitochondria and Reactive Oxygen Species; Mitochondria and Apoptosis. It will provide an opportunity for a unique learning experience where the student can prepare to evaluate and design new research in the cutting-edge areas of modern cell biology and molecular biology. Instead of a didactic program of lectures, the entire course comprises a small-group format in which students interact closely with a group of faculty who have active research programs. Each week, faculty will provide students with a brief overview of the research area. Students and faculty will then jointly discuss key publications that serve to bridge the gap between the student's prior understanding of the field and the state of the art in that area.

**INTD 6009. Advanced Molecular Biology. 2 Credit Hours.**

This course will provide an in-depth learning experience on the fundamentals of molecular biology as well as prepare the student to evaluate and design new research in the cutting-edge areas of modern molecular biology. The course combines a didactic program of lectures along with a small- group discussion format in which students interact closely with a group of faculty who have active research programs. The course focuses on active areas of research in molecular biology: Chromatin structure, Transcription, DNA Replication and Repair, Recombination, RNA processing and regulation, Protein processing, targeting and degradation. Each week, the faculty provide students with didactic lectures on a current research area. Students and faculty then jointly discuss Key publications that serve to bridge the gap between the fundamental underpinnings of the field and the state of the art in that area.

**INTD 6010. Evidence Based Dentistry. 1 Credit Hour.**

Designed to help students establish an "evidence-based practice" the course will provide students the opportunity to learn the skills necessary to evaluate and select new dental products and clinical procedures. This requires an ability to read and evaluate various sources of knowledge, including articles published in the dental and medical literature, advertisements, Internet sources, and continuing education programs. Lectures and readings are designed to provide a basic understanding of clinical research, epidemiology, and statistical procedures such that dental journal articles and other sources of knowledge can be critically evaluated. The long-range goal is to prepare the student to think critically and to make sound judgments regarding the acceptance of new knowledge, products, and procedures in private practice.

**INTD 6011. Introduction To Science Of Teaching. 1 Credit Hour.**

This course will provide insight into the basic skills of learning and teaching. Faculty from the Academic Center for Excellence in Teaching and the Graduate School will provide the opportunity to learn the skills, strategies, and experiences for a future in academia and teaching. Topics include lecture presentations on why scientists choose to teach, planning a student learning experience in addition to developing a lecture syllabus, curriculum and teaching portfolio and philosophy. The course is recommended for Supervised Teaching Course INTD 6071.

**INTD 6014. Perio/Pros/Endo/Orth Interdisciplinary Course 2. 1 Credit Hour.**

This seminar brings together the residents and graduate staff from the periodontic, prosthodontic, endodontic and orthodontic postdoctoral programs to share clinically relevant multidisciplinary information. Patient diagnostic evaluations and treatment plans are evaluated in an interactive environment. Selected topics involving new advancements are presented and discussed.

**INTD 6019. Pharmacotherapeutics. 1 Credit Hour.**

This course is designed to review general principles of pharmacology; current and accepted pharmacotherapy for the medical management of pain, infection, and selected systemic diseases; and associated adverse drug events. It is based on the top 200 drugs dispensed by U.S. community pharmacies for the prevention, diagnosis, and/or treatment of disease with special reference to dentistry.

**INTD 6033. Cell Signaling Mechanisms. 2 Credit Hours.**

This course covers the molecular mechanisms of action of various extracellular mediators including hormones, neurotransmitters, growth factors, cytokines, etc., and cell signaling events. Several areas will be discussed including: (1) mechanisms of mediator synthesis; (2) interaction of mediators with specific receptors; (3) modulation by mediators of various second messenger systems including cyclic nucleotides, inositol phospholipids, calcium, protein phosphorylation, ion flux, etc.; and (4) intra- and intercellular mechanism for regulating mediator action. Open for Cross Enrollment on Space Available basis.

**INTD 6040. Resident Lecture Series in Psychiatric Disorders and Psychopharmacology I. 1 Credit Hour.**

This is an interdisciplinary advanced elective in which students attend 17 lectures from the Psychiatry Year One Residents' lecture series. These lectures focus on the psychopathology, epidemiology, and pharmacological treatments for illnesses such as schizophrenia, anxiety disorders, trauma related disorders, eating disorders, and sleep disorders.

**INTD 6041. Basic Science Resident Lecture Series In Neurology. 1.5 Credit Hour.**

This is an interdisciplinary advanced elective in which students attend 20 lectures, selected from the full offering of daily one-hour lectures comprising the Neurology Residents' Basic Sciences lecture series. These lectures cover a range of topics, such as Epilepsy, Movement Disorders, the Thalamus, Parkinson's Disease, Alzheimer's Disease, Stroke, Sleep, etc., all given from a clinical perspective. In addition, graduate students will have the opportunity to observe or participate in at least two enrichment activities related topically to the lectures they attend, which may include such settings as case presentations, diagnostic training sessions, or clinical observations, again selected from the list of offerings included in the "Neurology Residents" series.

**INTD 6043. Structure & Function Of Membrane Proteins. 2 Credit Hours.**

This is a course targeted at students within any of the Graduate Tracks. The objective is to provide a broad view, allowing for in depth consideration in selected areas, of the structure and diverse functions of proteins within a membrane environment. Specific topics covered will include: ion selective channels, large membrane pores, membrane transporters, membrane pumps, and membrane receptors. The format of the course will be didactic lecture followed by student presentations of relevant topics. Open for Cross Enrollment on Space Available basis.

**INTD 6045. Clinical Practicum In Neuroscience. 1 Credit Hour.**

This course will provide students with a brief, but intense and very focused exposure to clinical practice in a relevant area of their choosing, designed and coordinated to best match their interests in close individual collaboration with a clinical mentor in one of the participating components: Neurosurgery, Neurology, Psychiatry, or Endodontics. Representative activities could include participation in case presentation and treatment planning, attending rounds with physicians and residents, direct observation of clinical procedures, patient interviews, follow-up care and outcome review. Potential venues may include inpatient psychiatric ward, sleep clinic, epilepsy clinic, stroke clinic, neurosurgical theater and surgical ICU. In consultation with the course director, students will first select one of the following sub-sections, then design their individually tailored clinical practicum experience with the coordinator for that section.

**INTD 6046. Resident Lecture Series in Psychiatric Disorders and Psychopharmacology II. 1 Credit Hour.**

This is an interdisciplinary advanced elective in which students attend lectures, selected from the full offering of weekly two-hour lectures comprising the Psychiatry Year One Residents' lecture series. These lectures cover a range of topics, such as Substance Abuse, Depression, Bipolar Disorder, etc., all given from a clinical perspective.

**INTD 6070. Teaching Excellence And Academic Skills (Texas). 1 Credit Hour.**

This course, designed to assist graduate students and faculty in acquiring teaching skills, is composed of four modules, each covering a range of topics from lecture and clinical teaching to instructional development to assessing student achievement.

**INTD 6088. Clinic Introduction. 4.5 Credit Hours.**

The informatics module, one component of this course, is a continuation from the first-year module. Students continue training on a higher level of computer use. The clinic component of the course is a series of small-group rotations for distinct clinic modules including patient assessment, periodontics, caries detection, preventive methods, sealants, pulp testing, local anesthesia, oral surgery, radiographic technique recertification, radiographic interpretation, digital photography, constructing a stabilizing appliance, patient education, infant exam, and opportunities for assisting in various clinics with the Dental School at external sites. At the end of the sophomore year, students will have had the opportunity to become well acquainted with the clinic environment and techniques for initial patient visits scheduled for the summer clinic. Professional development expectations are emphasized in the overall evaluation.

**INTD 6097. Research. 0.5-12 Credit Hours.**

This course is intended for first-year IMG students only. Students will be required to attend a minimum of 10 departmental (any) seminars during the semester and submit a 100-150 word synopsis of each seminar within two weeks of the seminar.

**INTD 6115. Perio/Pros/Endo/Ortho Interdisciplinary Course 3. 1 Credit Hour.**

This is a seminar that brings together the residents and graduate staff from the periodontic, prosthodontic, endodontic and orthodontics postdoctoral programs to share clinically relevant multidisciplinary information. Patient diagnostic evaluations and treatment plans are evaluated in an interactive environment. Selected topics involving new advancements are presented and discussed.

**INTD 7002. Neurobiology Of Learning And Memory. 1 Credit Hour.**

This course will focus on recent findings and topics related to the underlying aspects of the neural basis of learning and memory. Students will have the opportunity to learn about: molecular basis of memory formation, consolidation and retrieval, memory and emotion, associative learning, memory and amnesia, and recognition memory and the medial temporal lobe. The lectures will be interactive and driven by discussions of key journal articles. Each week the first hour will be reserved for lecturing and the second hour will be reserved for a discussion of a journal article.

**INTD 7003. Elective in International Medicine. 4 Credit Hours.**

This elective serves as a vehicle for students to participate in international medicine rotations. Students will work with a faculty sponsor to identify a program, either a pre-established site or a site discovered by the student which requires faculty approval. This elective includes: 1) The Center for Medical Humanities and Ethics International Scholars Program in India, a competitive program requiring a separate application through the department of Medicine, 2) Shoulder to Shoulder program in Latin America, which requires a separate application process and some cost (airfare and small project fee), and is available October, January, and April, 3) Programs in Nicaragua, Mexico, Panama, and Guatemala, and 4) Other sites available through online directory: <http://www.globalhealth-cc.org/GHEC/Resources/GHonline.htm>. All rotations share a commitment to service learning - medical education and self-reflection that arises out of service to needy populations. Students spend up to 4 weeks (or possibly longer) living in an international site and participating in the care of patients, under the supervision of local and visiting health care providers. The clinical settings and caseload will vary based on the location. There may be opportunities for patient education and emphasis on efforts of local empowerment, aiming to build up the communities in a sustainable way. Students will be expected to integrate themselves into the health care delivery system, and when possible, to strive to make an impact through community education and home visits. For certain Latin American sites, fluency in Spanish is a prerequisite. Students are encouraged to seek similar service learning experiences with underprivileged populations in San Antonio and Border communities prior to or after the rotation. End of rotation "reflection essays" are required and will serve to process student experiences.

**INTD 7005. Indian Health Care Preceptorship. 4 Credit Hours.**

This elective offers the opportunity for an experience in the health care of Native Americans, coordinated through the Indian Health Service. Most experiences involve both inpatient and outpatient care under direct supervision of board certified family physicians or internists. Educational activities such as conferences, teaching rounds, etc., may vary from site to site. All clinical sites are located outside the state of Texas, including sites in New Mexico, Arizona and Alaska. Early application is recommended. Students completing appropriate application forms may be reimbursed for transportation costs and provided room and board by the Indian Health Service.

**INTD 7007. Literature and Medicine. 2 Credit Hours.**

In this course you are required to read short stories, poems, and a book of nonfiction. While many of the stories or poems directly address medical or ethical issues, the primary purpose is not to enhance your store of knowledge in these areas, but to promote your appreciation of these works through discussions with other students (online via Blackboard and in class) and with authors and lecturers. Your own contributions to the course - not just the insights you've gained as medical students but the wisdom you bring to the class as human beings - will be critical to its success. We hope that the readings will help you prepare for and process your clinical experiences, furthering your development as a person as well as physician. There will be no "right" or "wrong" answers in this course; rather, our goal is to encourage thoughtful and serious responses to the readings and a lively and fulfilling conversation about them and the issues they raise. Students from Christian Medical College in Vellore, India, will join in our discussion online. MSIV students will receive two credits for completion of this longitudinal elective. All students are expected to participate in class discussions. Grades are earned by reading assignments, attendance at class meetings, and posting primary and secondary responses to posted discussion questions. Open for Cross Enrollment on Space Available basis.

**INTD 7020. Clinical Patient Management. 5 Credit Hours.**

This course is designed to help students develop skills in clinical behavioral dentistry through small group discussions, lectures, and routine patient treatment by application of the principles of coordinating patient care; communicating effectively with colleagues, staff, and faculty; and managing time, records, and environment. The students are required to manage their comprehensive care patients in the Junior Clinic following the principles presented in this course.

**INTD 7074. Topics In Translational Medical Product Development. 1 Credit Hour.**

It is crucial to understand the intricate process of translating basic research into market driven products, navigate the complex pathways of intellectual property management and the regulatory affairs of agencies such as the FDA. This course will offer students in biomedical sciences the opportunity to integrate industry-relevant training and experience with their basic science education. The course will explore the marketing and regulatory process by which a biomedical product is developed and brought to commercialization.

**INTD 7091. Independent Studies. 1-9 Credit Hours.**

Students will have the opportunity to use this course to study for the National Board, Part II examination, according to their own need. This course also will serve as a framework for a student returning from a leave of absence or from other protracted time away from classes or clinic. At the conclusion of the course, the enrolled student must demonstrate knowledge and/or skills and/or values consistent with the expectations for entering the level of course study from which the student left. An individualized course of study will be developed once the student is enrolled.

**PSYC Courses****PSYC 3005. Psychiatry Clerkship. 6 Credit Hours.**

The psychiatric clinical clerkship is designed to familiarize the student with the personality traits, illnesses, and emotional disturbances that affect health and productivity. It is an opportunity for the student to develop and strengthen clinical skills in interviewing patients, formulating treatment plans, and carrying out treatment with patients who have psychiatric illness. The clerkship is arranged so the student may select the assignment area on the basis of particular interest, i.e., an inpatient/outpatient setting. The student's role in the clerkship is arranged to allow for considerable experience in the working relationship between patient and "physician" in the treatment process. Seminars have been developed to allow the student an in-depth appreciation of the various psychiatric states and emotional problems that affect the general practice of medicine. The student-staff ratio allows for small groups of students to meet with faculty, thereby enhancing learning. The clerkship is an opportunity for the students to look at their personal feelings and values and understand how they influence patient care, to learn how to deal with psychiatric disease, and to become more comfortable in dealing with the personalities of patients with organic disease. Prerequisites: Successful completion of all required preclinical courses is prerequisite to enrollment in any of the clinical clerkships.

**PSYC 4000. Special Topic. 4 Credit Hours.**

This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

**PSYC 4001. Clinical Psychiatry. 4 Credit Hours.**

The fourth-year medical student inpatient rotation is designed as a bridge between the role of third-year clerk and the very active, responsible role of the intern. The fourth-year medical student will act as the primary psychiatrist under the supervision of a full-time attending. The student will be an integral member of the team, and will participate in all team activities. All activities for this experience will be on an inpatient psychiatric service at the University Hospital, Veterans' Administration Hospital, both in San Antonio or the Rio Grande State Center in Harlingen. These are busy units with brief lengths of stay. The student will have the opportunity to gain considerable experience with crisis management of serious mental illness as well as an understanding of acute exacerbations of chronic mental illness.

**PSYC 4008. Clinical Biological Psyc Research. 4 Credit Hours.**

The course includes participation in clinical research into biochemical disturbances in mood disorders, mechanism of drug actions, and clinical testing of experimental drugs in depression, ADHD, schizophrenia, and anxiety.

**PSYC 4015. Neuropsychiatry - VA Hosp. 4 Credit Hours.**

This rotation will introduce students to an appreciation of the correlation between brain dysfunction and behavior disorders. Students will have the opportunity to learn how to clinically evaluate patients for cognitive dysfunction and perform a behavioral neurological exam. The appropriate use of structural and functional brain imaging studies will be emphasized. Students will also be required to participate in the management of patients with neuropsychiatric disorders.

**PSYC 4020. Consultation-Liaison. 4 Credit Hours.**

The course includes participation in the evaluation and management of medical and surgical inpatients with psychiatric problems at the University Hospitals.

**PSYC 4023. Child & Adolescent Psychiatry. 4 Credit Hours.**

To gain clinical experience in both inpatient and outpatient child/adolescent psychiatry, the student will attend the Child Guidance Center and Christus Santa Rosa Children's Hospital outpatient psychiatry clinics. Some half-days are spent at the Southwest Mental Health Center working with children and adolescent inpatients. The student will also rotate one half-day a week at the Bexar County Juvenile Detention Center and attend seminars with the child and adolescent psychiatry residents. Experiences may be adjusted to fit students' individual interests.

**PSYC 4024. Telepsychiatry. 4 Credit Hours.**

The rotation introduces the medical student to some of the technical, legal, and patient care issues arising from the use of telehealth technologies. Telehealth is defined as providing services remotely through technology including phone contact and videoconferencing. This technology is being used increasingly to provide needed psychiatric services for underserved rural areas. Studies have demonstrated non-inferiority of services provided through telehealth services. Medical students will participate in a 1:1 supervised experience with a faculty member providing telepsychiatry for mental health evaluation and treatment using a Tandberg unit from the remote site in San Antonio to an originating clinical site in VA Texas Valley Coastal Bend Healthcare System (VATVCBHCS). There are no in-person patient contacts during this rotation as all services are provided through videoconferencing to the originating VA clinics. This educational experience will be provided under the supervision of the telehealth psychiatrist located on site in San Antonio with the medical student. Notes and orders will be documented through the VA's Computerized Patient Record System (CPRS). Patients will be asked to complete clinical rating scales at the time of the appointment and a satisfaction survey following each clinical encounter, which are tracked for quality improvement purposes. The rotation will include 1/2 hour weekly didactic sessions for the students. Material will include information on clinical skills such as interviewing, mental status exam, and diagnostics as they are performed using the videoconferencing equipment.

**PSYC 7000. Off Campus. 4 Credit Hours.**

All off campus rotations must be approved by the designated faculty member prior to the beginning of the rotation (at least one week before the course begins). Credit will not be given for any rotation that has not been approved in advance. Required paperwork includes: "Course Approval" form, a written letter or email for acceptance form the physician preceptor with the start and end dates of the course/rotation, and a course description of your learning objectives and responsibilities during the rotation. Forms must include a complete address and telephone number for the off campus location or residence address for the student while at the off campus site. Forms will not be approved after the rotation has already begun. Contact the department for assistance with enrolling in this course.

**MEDI Courses****MEDI 3035. Medical Intensive Care Unit Elective. Credit Hours.**

This elective is designed to prepare students for the challenge and responsibility of caring for highly complex patients in the intensive care unit. Students are expected to develop an advanced knowledge of the evaluation, diagnosis, and management of Internal Medicine patients with complicated illness and to prepare for the direct responsibility and professionalism required in caring for patients as a sub-intern.

**MEDI 3105. Medicine Clerkship. 8 Credit Hours.**

The objectives of this clinical experience are to provide opportunities for students to develop patient evaluation skills, productive self-learning techniques, a sound pathophysiological approach to medical disease, a concern and awareness for the patient's needs, and personal professional behavior. The student spends eight weeks, divided into two 4-week blocks, assigned to the inpatient General Medicine Service. An additional four weeks are spent in outpatient services. Bedside clinical teaching is emphasized by asking the student to perform patient evaluations, to contribute to the care of selected patients, and to participate in the clinical rounds of the services. During this clerkship the student receives intensive instruction from the Internal Medicine house staff and faculty. In addition, the student is expected to undertake independent patient-oriented reading and to systematically review pertinent information introduced during the preclinical years. Finally, students attend a series of clinical conferences including medical grand rounds, morbidity and mortality conferences, clinical subspecialty conferences, and organized courses in electrocardiography and nutrition. Successful completion of all required preclinical courses is prerequisite to enrollment in any of the clinical clerkships. The student spends eight weeks, divided into two 4-week blocks, assigned to the inpatient General Medicine Service. An additional four weeks are spent in outpatient services. Bedside clinical teaching is emphasized by asking the student to perform patient evaluations, to contribute to the care of selected patients, and to participate in the clinical rounds of the services. During this clerkship the student receives intensive instruction from the Internal Medicine house staff and faculty. In addition, the student is expected to undertake independent patient-oriented reading and to systematically review pertinent information introduced during the preclinical years. Finally, students attend a series of clinical conferences including medical grand rounds, morbidity and mortality conferences, clinical subspecialty conferences, and organized courses in electrocardiography and nutrition.

**MEDI 4000. Special Topic. 4 Credit Hours.**

This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

**MEDI 4002. Clinical Cardiology. 4 Credit Hours.**

Students are required to participate in inpatient consultations and outpatient clinics evaluating patients with cardiovascular disease. Students are required to perform inpatient consultations at University Hospital and Audie L. Murphy V. A. Hospital. Students are required to perform appropriately focused history and physical exam, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plan on each assigned patient. Students are required to also have learning opportunities in ECG interpretation, the cardiac catheterization laboratory, and non-invasive test interpretation such as exercise treadmill testing and echocardiograms. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4004. Cardiovascular Research. 4 Credit Hours.**

Students can participate in original research, basic or clinical, in collaboration with a faculty member of the Division of Cardiology. Students must meet expectations of research responsibilities based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4006. Coronary Care Unit - Subinternship - VA. 4 Credit Hours.**

This subinternship is designed to prepare students for the intense and responsible role of the intern. The subintern is an integral member of the team and is required to participate in all team activities and participate in all medical care for his/her patients, under the supervision of the Internal Medicine resident, Cardiology fellow, and Cardiology attending. Students are required to care for patients in the CCU and Telemetry ward. The student will be involved in the inpatient care of patients with cardiac disease, including critically ill patients needing hemodynamic and respiratory monitoring and ventilation support. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4007. Cardiology Care Unit Sub-Internship-SAMMC. 4 Credit Hours.**

This subinternship is designed to prepare students for the intense and responsible role of the intern. The subintern is an integral member of the team and is required to participate in all team activities and participate in all medical care for his/her patients, under the supervision of the Internal Medicine resident, Cardiology fellow, and Cardiology attending. Students are required to care for patients in the CCU and Telemetry ward. The student's clinical performance will be evaluated by the supervising attending. Students are required to participate in the care of patients with a wide spectrum of acute and chronic cardiovascular problems. Emphasis is placed on mastering basic physical assessment through history and detailed cardiovascular physical examination and the interpretation of non-invasive and invasive cardiac testing. Students will have exposure to the catheterization laboratory, M-mode, 2-D, and Doppler echocardiography, color flow imaging, exercise testing, and 24-hour dynamic ECG rhythm monitoring and analysis. No late drops will be accepted. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4008. Clinical Endocrinology. 4 Credit Hours.**

Students are required to participate in inpatient consultations and outpatient clinics evaluating patients with pituitary and hypothalamic disease, adrenal disease, diabetes mellitus, thyroid disorders, and lipid disorders. Students are required to perform inpatient consultations at Audie Murphy VA Hospital and University Hospital. Outpatients will be evaluated in weekly endocrine clinics at the VA Hospital and Texas Diabetes Institute. Students will be responsible for the initial evaluation of assigned patients, presentation of findings from the history and physical exam, interpretation of endocrine testing, and formation of differential diagnosis. If rotation is done as the Ambulatory selective, the student is required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4009. Calcium & Bone Metabolism Research. 4 Credit Hours.**

This research elective is recommended for students with serious research interests. It offers the opportunity to participate in ongoing projects under the supervision of division faculty. Students must meet expectations of research responsibilities based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4010. Clinical Dermatology. 4 Credit Hours.**

This elective is recommended for students with a serious interest in Dermatology, and for those intent upon further training in Internal Medicine, Family Medicine, and Pediatrics. It offers considerable clinical experience in both outpatient clinics and supervised inpatient consultations. Students rotating at UTHSCSA are required to attend teaching conferences every Wednesday (all day) and Friday afternoons. This didactic time for students and residents includes lectures, journal reviews, text reviews, and clinical Kodachrome sessions. Didactic sessions will be held separately at WHMC and BAMC. Each student is required to do a 10-minute PowerPoint presentation on a topic of choice that is both dermatology related and fits in with choice of residency. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4012. Clinical Endocrinology - WHMC. 4 Credit Hours.**

Students will have exposure to a very active clinical endocrinology consultation service, outpatient endocrine clinic, and the performance and interpretation of diagnostic procedures in endocrinology. Students must perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plan on all assigned patients. Clinical performance will be evaluated by supervising attending. No late drops will be accepted. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4013. Clinical Epidemiology Research. 4 Credit Hours.**

Students will have the opportunity to participate in ongoing epidemiological surveys in diverse populations. Topics covered include population and genetic epidemiologic studies sampling, family studies (including studies of candidate genes and systematic genome searches), design of epidemiological instruments, quality control of field operations, documentation of health outcomes, management of large data bases, and data analysis including complex segregation and linkage analysis. Students must meet expectations of research responsibilities based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4014. Gastrointestinal Research. 4 Credit Hours.**

Students are required to participate in ongoing research projects under the supervision of division faculty. Supervising faculty will complete evaluations at end of the project. Students must meet expectations of research responsibilities based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4015. Clinical Gastroenterology. 4 Credit Hours.**

Students are required to participate in inpatient consultations at Audie L. Murphy V. A. Hospital (ALMVAH) and University Hospital, outpatient clinics at ALMVAH and University Health System, and special gastrointestinal diagnostic testing under the supervision of Internal Medicine residents, GI fellows, and GI Faculty. Students are required to participate in the independent evaluation of patients with disorders of the gastrointestinal tract, pancreas, and liver. Students are required to become familiar with the application, indications, contraindications, and complications of gastroenterological procedures, as well as the proper preparation of the patient for the procedure. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.



**MEDI 4017. Gastroenterology - SAMMC. 4 Credit Hours.**

Students will be exposed to clinical gastroenterology with didactic instruction, and will work in conjunction with house staff as part of the primary care team. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plan on all assigned patients. Students will have exposure to the full range of special diagnostic procedures including observation of upper endoscopy, endoscopic ultrasound, colonoscopy, flexible sigmoidoscopy, endoscopic retrograde cholangiopancreatography (ERCP), percutaneous liver biopsy, laparoscopy, and related techniques. No late drops will be accepted. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4018. Clinical Hematology. 4 Credit Hours.**

The consultation service includes clinical exposure to inpatient consultations, conferences, and outpatient clinics. There is opportunity for training in blood and marrow morphology, observation, and performance of special clinical and laboratory procedures. Students are responsible for the following on all assigned patients: history and physical examination, admission/progress notes, doctor's orders, interpretation of laboratory data, formation of differential diagnosis, assessment, and management plan. Students on both services are required to attend conferences including Hematology Clinical Conference, Hematology/Pathology Conference, Bone Marrow Transplant Conference, and Coagulation Conference. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4019. Hematology Research. 4 Credit Hours.**

Students are required to participate in ongoing clinical or basic research; individual projects encouraged with written report or results required. Opportunity may be provided for combined clinical and research experience in individual cases by special arrangement. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4022. Infectious Disease Research. 4 Credit Hours.**

For the students who wish to learn research techniques in Infectious Disease, an individual project will be designed that may involve studies of antimicrobial activity, animal models of infection, host defense mechanisms, immunologic aspects of infectious diseases, or application of molecular biology to studies of pathogens. We are prepared to teach research methodology pertinent to measurement of antigens and antibodies; and the molecular biology and immunobiology of fungal, bacterial, and chlamydia infections. Research may be directed toward in vitro work, work with laboratory animals, or direct clinical investigation. In addition, students may review local clinical experience with a given infectious disease process (e.g. tuberculosis, meningitis, amebiasis, endocarditis, etc.) with the goal of preparing a paper for publication. Students must meet expectations of research responsibilities based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4023. Clinical Infectious Disease. 4 Credit Hours.**

Infectious diseases cross all subspecialty lines, especially because antibiotics and antifungal and antiviral agents are employed widely throughout medical practice. This elective will provide practical experience in the diagnosis and management of patients with infectious diseases. There will be particular emphasis upon the pharmacology and pharmacodynamics of antimicrobial agents, selection of appropriate diagnostic tests and therapeutic agents, and the appropriate orientation of the clinician to hospital microbiology laboratories. Students are required to participate in outpatient clinics and inpatient consultations at University Hospital and Audie L. Murphy V. A. Hospital and the associated clinics. Students will be responsible for the following in all assigned patients: history and physical examination, written and verbal patient presentations, interpretation of laboratory testing, participation in applicable procedures, development of differential diagnosis, assessment, and management plans. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4024. Infectious Disease - SAMMC. 4 Credit Hours.**

The course will provide students the opportunity to obtain a broad experience in the management of infectious diseases. The spectrum of illness ranges from HIV infection to chronic osteomyelitis. Students are required to care for patients with primary infectious disease problems, or patients with major illnesses in whom an infectious complication has arisen, under the direction of the consultation resident, with supervision from the fellow and staff on the Infectious Disease Service. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. Basic bacteriological techniques and specific techniques of bacteriological identification and sensitivity testing are reviewed. No late drops will be accepted. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4025. Clinical Nephrology. 4 Credit Hours.**

Students are required to participate in the consultation service, outpatient clinics, conferences, acute dialysis unit, and renal biopsy program. A variety of acid-base fluid and electrolyte disorders are seen in addition to the entire spectrum of renal diseases. Student exposure to chronic dialysis and renal transplantation programs is also possible. Students perform appropriately focused history and physical exam, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. If rotation is done as the Ambulatory Selective, the student is required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4026. Nephrology Service - SAMMC. 4 Credit Hours.**

The Nephrology Service offers students training and experience in the broad field of clinical nephrology. This consult rotation provides exposure to ambulatory and hospitalized patients with a variety of renal diseases including hypertension, glomerulonephritis, acute and chronic renal failure; exposure to problems of fluid, electrolyte, and acid-base disturbance. While on the service, students will be able to observe acute and chronic hemodialysis. Students are required to perform initial evaluations, including history and physicals, and will, under appropriate supervision, perform selected diagnostic procedures. A didactic lecture series, covering the broader topics of nephrology, is repeated on a monthly basis and the students are expected to attend. No late drops will be accepted. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4028. Renal Research. 4 Credit Hours.**

Students are required to participate in ongoing research with the opportunity to learn some of the fundamental techniques of renal physiology and cell biology. Major focus of research is the role of peptide growth factors in mediating hemodynamic and metabolic events in the kidney. Independent research encouraged if student spends two or more selective periods in the laboratory. Students must meet expectations of research responsibilities based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4034. Oncology Consultation Service. 4 Credit Hours.**

The students are required to participate in the clinical activities of the Medical Oncology Section of the Division of Hematology/Oncology, with experience on the consultation service at both University Hospital and the VA Hospital, plus intensive outpatient experience in the Oncology Clinics. The inpatient consultation experience provides exposure to management of complex oncology problems. The clinic experience provides exposure to a variety of clinical medical oncology problems and their management in the outpatient setting. The student is required to become familiar with all aspects of supportive care for the oncology patient. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4042. Coronary Intensive Care Unit - Subinternship - UH. 4 Credit Hours.**

The objective of this subinternship is to prepare students for the intense and responsible role of the intern. The subintern is an integral member of the team and are required to participate in all team activities and participate in all medical care for his/her patients, under the supervision of the Internal Medicine resident, Cardiology fellow, and Cardiology attending. The student is required to become proficient in the work-up, diagnosis, and management of patients with acute myocardial infarction, acute respiratory failure, and other commonly encountered acute crises; develop expertise at arrhythmia recognition/ therapy, principles involved with airways management/mechanical ventilation. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4043. Clinical Chest Disease Consultation Service. 4 Credit Hours.**

Students are required to work in the inpatient and outpatient settings, participating in clinics, inpatient consultations, and division conferences. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. Students are required to actively participate in the work-up and management of patients with acute and chronic lung diseases seen by the Consultation Service and attend Pulmonary clinics at the VA Hospital and UHC-D. Students will be exposed to various diagnostic methods including radiographic, radionucleotide, bronchoscopy, and pleural biopsy techniques. Through active participation, the student should become proficient in interpreting commonly used pulmonary function tests and chest x-rays. Principles and methods involving respiratory therapy, antimicrobial therapy, and evaluation of common pulmonary disorders will be emphasized. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4045. Pulmonary Medicine- SAMMC. 4 Credit Hours.**

Students are required to learn the recognition and treatment of acute and chronic pulmonary problems on a consult service with selection and implementation of appropriate treatment modalities. Students also are required to become familiar with pulmonary function testing to include interpretation and application of pulmonary physiology to a clinical setting. Principles of respiratory therapy will be emphasized to include the utilization of respirators and oxygen delivery systems. Clinical projects may be assigned to stress key teaching points. An active pulmonary clinic and complete pulmonary function laboratory will be available for students to gain clinical experience. No late drops will be accepted. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4046. General Medicine Ward Subinternship-UH/VA. 4 Credit Hours.**

The goal of this subinternship is to prepare students for the intense and responsible role of the intern. The subintern is an integral member of the team and is required to participate in all team activities and participate in all medical care for his/her patients, under the supervision of the Internal Medicine resident and attending. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4047. General Medicine Ward Subinternship-SAMMC. 4 Credit Hours.**

This subinternship is designed to prepare students for the intense and responsible role of the intern. The subintern is an integral member of the team and is required to participate in all team activities and participate in all medical care for her/his patients, under the supervision of the Internal Medicine resident and attending. No late drops are accepted. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4048. Medical ICU Subinternship - SAMMC. 4 Credit Hours.**

The goal of this subinternship is to prepare students for the intense and responsible role of the intern. The subintern is an integral member of the team and is required to participate in all team activities and participate in all medical care for his/her patients, under the supervision of the Internal Medicine resident, Critical care fellow and attending. Familiarization with pulmonary and hemodynamic physiology, as it applies to intensive care medicine, as well as the use and interpretation of data obtained from monitoring instruments, will be covered. No late drops will be accepted. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4049. Clinical Rheumatology. 4 Credit Hours.**

The differential diagnosis and treatment of rheumatic and autoimmune diseases are taught through active student participation in outpatient clinics, consultation rounds, journal clubs, and division conferences. Students are required to evaluate patients at University Hospital, Audie Murphy VA Hospital, and UHC-D. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. Students will also have exposure to community resources for the special problems encountered by the patients in this clinic and be able to identify different types of medical delivery systems. If rotation is done as the Ambulatory Selective, the student is required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4062. Allergy-Immunology - WHMC. 4 Credit Hours.**

The student will be a member of the Allergy-Immunology Ward Consult Team, along with a staff member, first-year fellow, and usually a resident. Students are required to assist in the evaluation of the inpatient consultations, and in addition see outpatients and attend all Allergy-Immunology Service educational activities. Students are required to perform appropriately focused history and physical exam, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plan on all assigned patients. No late drops will be accepted. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4066. Medical ICU Subinternship - UH/VA. 4 Credit Hours.**

This subinternship is designed to prepare students for the intense and responsible role of the intern. The subintern is an integral member of the team and is required to participate in all team activities and participate in all medical care for his/her patients, under the supervision of the Internal Medicine resident, Pulmonary fellow, and Pulmonary/Critical care attending. Students are expected to participate in daily hospital rounds, morning report, Grand Rounds, Morbidity and Mortality conference, IM Housestaff conferences. The students are required to actively participate in the work-up and management of patients with critical illnesses under close supervision of the housestaff, fellows, and faculty. During this rotation, the student will be exposed to the fundamentals of ventilation support, airway management, respiratory and hemodynamic monitoring, stabilization and support of the critically ill patient. Emphasis is placed upon a system approach to patient evaluation and will include didactic sessions with critical care faculty in addition to daily rounds. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4068. Geriatric Medicine. 4 Credit Hours.**

This rotation offers clinical experience in geriatric internal medicine. The student is required to participate in the Section's outpatient clinic, academic nursing home, and didactic educational activities. The student also has the opportunity for exposure to other multidisciplinary programs in geriatric medicine, including hospital-based home care. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. Students will also have exposure to community resources for the special problems encountered by geriatric patients and have the opportunity to learn to be able to identify different types of medical delivery systems. If the rotation is done as the Ambulatory selective, the student will be required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4069. Research in Aging. 4 Credit Hours.**

This research elective offers the opportunity to participate in ongoing basic and clinical research on aging, including basic mechanisms of aging, nutritional modification of the aging process, gerontologic aspects of hormone action and hepatic glucose metabolism, clinical geriatric issues of long-term care interventions, ethics, and health services for the elderly under the supervision of faculty in the Department of Medicine (Division of Geriatrics) and the Department of Physiology. Students must meet expectations of research responsibilities based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4074. AHEC Clinic Experience. 4 Credit Hours.**

Under the auspices of the UT Health Science Center's South Texas Program, this experience exposes students to primary care of ambulatory patients at various clinical training sites in South, East, West, and the Coastal area of Texas. The goals are to expose you to 1) primary care, 2) community-based practice, and 3) delivery of medical care to underserved/rural populations and health disparities. Please reference the link <http://southtexas.uthscsa.edu> for more information. The student must spend time working in the office practice of a physician who is board certified in Internal Medicine and/or one of its specialties. In addition, the student can gain experience in preventive services applicable to infectious diseases, tuberculosis, diabetes, etc., and work with health professionals to gain a broader understanding of health care needs and services depending upon the area in which he/she is working. The student will be required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Student housing expenses may be covered by the AHEC, but there will be no reimbursement for travel costs. No late drops will be accepted. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4077. EKG Interpretation. 2 Credit Hours.**

This rotation is designed for students who have basic to intermediate expertise in reading ECG's and who are motivated to enhance this expertise through independent study. Students have the opportunity to become proficient in the interpretation of ECG's through daily self-study of electrocardiograms. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4078. HIV/AIDS Inpatient Service. 4 Credit Hours.**

This elective on the HIV/AIDS Medicine Team 6 at University Hospital offers the opportunity to assume direct patient responsibility under the supervision of a resident, Infectious Disease fellow, and attending faculty. This subinternship is for persons interested in obtaining extensive teaching in HIV disease. It provides practical experience in the diagnosis and treatment of HIV complications such as PCP, CMV, toxoplasmosis, invasive fungal infections, mycobacterial disease, and oncological and neurological complications of this disease. These objectives will be obtained through a team approach to patients with HIV infection involving nurses, physicians, and other staff, and also will include a formal didactic teaching series. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4079. Clinical Preceptorship in General Internal Medicine. 4 Credit Hours.**

The student will join the practice of a clinical faculty member practicing general internal medicine in an internal medicine subspecialty in the local community. Activities include hospital rounds, office visits, hospital committee meetings, and an introduction to practice management. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. Students will also have exposure to community resources for the special problems encountered by patients in the ambulatory setting, and be able to identify different types of medical delivery systems. If rotation is done as the Ambulatory Selective, the student will be required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4084. Medicine Intensive Subinternship - RAHC. 4 Credit Hours.**

This sub-internship in MICU is designed to prepare students for the intense and responsible role of the intern caring for the patients in the intensive care unit. The sub-intern is an integral member of the team and will participate in all team activities and medical care for his/her patients, under the supervision of the Internal Medicine resident and Pulmonary/Critical Care attending. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4085. General Medicine Ward Subinternship - RAHC. 4 Credit Hours.**

This sub-internship is designed to prepare students for the intense and responsible role of the intern. The sub-intern is an integral member of the team and will participate in all team activities and medical care for his/her patients, under the supervision of the Internal Medicine resident, and will follow no more than 5 patients at any time, depending on the complexity of the patients. Students will provide comprehensive patient care from admission to discharge and participate in procedures. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4086. Mindfulness in Medicine. 0.5 Credit Hours.**

Mindfulness is important in one's personal life as well as professional work. It supports the physician in successfully caring for patients, connecting to colleagues and patients, and maintaining personal satisfaction. There is some evidence that mindfulness training in the professional development of physicians helps with effective decision making and reducing medical errors, increases sensitivity to feelings, improves attention and memory, decreases stress, and enhances reflective consideration in problem solving and decision making. Senior students are facing the formative transition to residency training, which is laden with new challenges and stressors such as work demands that conflict with emotional and physical availability for family and friends, an immense amount of new knowledge and skill to acquire, increased work hours in a complex health care system, and coping with death and the potential for errors in patient care. New interns are fearful of making mistakes that harm a patient and worry about their work-life balance. The goal of this course is to provide and apply skills in mindfulness for everyday practice so that learners are armed with the knowledge and techniques to improve their attention, renew their perspective during times of stress, build resiliency, and prevent errors and harm in their professional practice. Learning Objectives: By the end of this course, students should be able to: 1. Identify personal characteristics of leadership, bias, and resiliency and use this self-awareness to enhance professional relationships 2. Integrate techniques of mindfulness into daily life to improve attention to personal well-being, reduce stress, and avoid burnout during residency training 3. Use self-reflective writing to increase self-awareness, broaden perspectives, and cultivate empathy 4. Apply mindfulness to clinical practice to improve patient communication, recognition of error-prone situations, and quality of medical care. Course topics include: 1) Self-awareness and Resiliency; 2) Leadership, Bias, and Collaboration; 3) Mindfulness in Patient Care: Self-care and preventing medical errors; and 4) Narrative Medicine. Learning of course topics will be accomplished with a combination of self-study educational resources and assigned readings, didactic lecture, skills workshops, writing exercises, and small group discussion. Each student will be required to complete a portfolio of reflective writing and surveys, which will be used in small group discussions. To monitor the effectiveness of the course content and teaching methods, students will complete pre- and post-course surveys. Prerequisites: Completion of all core clerkships.

**MEDI 4087. Point of Care Ultrasound. 4 Credit Hours.**

This elective is designed to introduce students to the use of diagnostic bedside ultrasound in the care of hospitalized medicine patients, and is paired with the Internal Medicine Residency Point of Care Ultrasound Elective. In addition to review of ultrasound physics and machine controls/transducers, students will obtain knowledge and skills in image acquisition, image interpretation and pitfalls/limitations of various cardiac, pulmonary, abdominal and vascular diagnostic ultrasound applications. Other topics include clinical integration of ultrasound skills into patients with shock, cardiac arrest, respiratory failure, and volume status abnormalities. Training will be accomplished with a combination of didactic lectures, provided self-study educational resources, image acquisition skills workshops at the Center for Clinical Ultrasound Education, supervised bedside ultrasound exams of hospitalized medicine/ICU patients and independent ultrasound scanning sessions. Each student is required to complete a portfolio of ultrasound examinations covering the scope of the course material, which will be reviewed with expert faculty on a weekly basis for quality assessment, image interpretation practice and further teaching. The elective is primarily designed for students pursuing residency with an adult inpatient focus. Students must have successfully completed Internal Medicine, Family Medicine, Surgery and Emergency Medicine clerkships before taking this elective.

**MEDI 4103. Hematology for the Intern. 0.5 Credit Hours.**

The Advanced Hematology course will be taught using care-based discussion. The first session will be a review of red blood cell and white blood cell abnormalities. The remainder of the sessions will focus on two to three specific cases of red blood cell or white blood cell disorders. Discussion will cover differential diagnosis, appropriate laboratory studies, clinical findings, and prognosis. Discussions will include adult and pediatric cases of various types of anemia, leukemia, myeloproliferative disorders, myelodysplastic states, plasma cell disorders, and lymphoma. The pass/fail grade will be determined by attendance and participation in group discussions.

**MEDI 4114. Combined Consultation Service In Geriatrics & Palliative Medicine. 0.5 Credit Hours.**

This elective didactic course will introduce the basic elements of assessing a geriatric patient or a patient in need of palliative care in the in-hospital setting.

**MEDI 4115. Palliative Care. 0.5 Credit Hours.**

This MS4 didactic elective will focus on the main beliefs of palliative care, which include symptom control and end-of-life care in general and in specific populations, fulfilling the following educational principles, applicable to many other areas in medicine: \* Communication skills instruction for medical students \* Exposure to interdisciplinary teams (IDT) \* Instruction in the multicultural practice of medicine.

**MEDI 4120. Intermediate ECG Interpretation. 0.5 Credit Hours.**

Course consists of 8 one-hour sessions. Each session will cover 5 to 15 examples of ECG teachings for discussion moderated by the instructor. Each student will be given a handout with copies of the tracings. Topics covered will include hypertrophy, atrial arrhythmia, ventricular arrhythmia, conduction abnormality, ischemia, injury, infarction, and pacemakers. Grade based on class participation.

**MEDI 4121. Intermediate Bedside Cardio Exam. 0.5 Credit Hours.**

Course consists of 8 one hour sessions. Each session will include demonstrations of physical findings and their elucidation in patients with cardiovascular disease. Topics covered will include brief review of cardiac cycle, characteristics of innocent murmurs, systolic murmurs, diastolic murmurs, evaluation of arterial and venous pulsations, congestive heart failure, and self assessment. Grade based on class participation.

**MEDI 4150. Tropical Medicine & International Health. 0.5 Credit Hours.**

Course consists of 10 contact hours and will cover topics specifically related to health in the tropics and developing world. The course will consist of an introductory lecture and nine 1 hour small group case-based discussions. Students will prepare for the small group discussions through self-initiated study of the provided syllabus and faculty will lead the case-based discussion groups. Student grades will be determined by participation in the small group discussions (50%) and a final exam (50%).

**MEDI 4151. Poverty, Health, And Disease Elective. 0.5 Credit Hours.**

This elective course is offered to students who wish to gain insight into the complex interplay between poverty and health, both in the United States and in resource-limited settings around the world. The purpose of the course is to expose the students to several thought leaders and appropriate published literature, including books written to address these concepts. The course will explore the problems of inequality of access to health care and its impact on health delivery systems with examples from Guatemala, Haiti, and New Orleans. Open for Cross Enrollment on Space Available basis.

**MEDI 4153. Informatics and Advanced Evidence-Based Medicine. 0.5 Credit Hours.**

The course is for students who want to master information and evidence. We will use the computer lab to learn advanced skills in: 1) retrieving information, 2) storing and filing information, 3) assessing information, and 4) keeping up with new advances. The skills will include both strategies and techniques. To pass the course, students must complete a small final project that previous students have enjoyed. In their project, they will publish on Wikipedia a short, structured summary of one article for a clinical topic. I will walk you through creating the edits. The edit can be done anonymously if the student prefers. By completing the project, the students learn the goals of the course. Credit for successful completion of the course requires active participation in class activities, a minimum of 100% attendance, and successful completion of final project.

**MEDI 4155. Clinical Epidemiology for the Intern. 0.5 Credit Hours.**

Clinical epidemiology – the basic science of clinical medicine that makes predictions about individual patients based on the occurrence of clinical events in groups of similar patients and using strong scientific methods to ensure that the predictions are accurate – is especially powerful in situations of medical uncertainty. Essential concepts and methods of clinical epidemiology are presented as they pertain to obtaining answers to clinical questions and guiding clinical decision-making with the best available evidence. A case-based approach is used to illustrate the relevance of clinical epidemiological approaches to decision-making about the care of individual patients. Learning activities incorporate both didactic, small-group problem solving approaches, and procedure skills (e.g., central venous line placement, incision and drainage of abscess, lumbar puncture, and thoracentesis). Credit for successful completion of the course will be based on attendance.

**MEDI 4170. Internal Medicine Internship Readiness Elective. 4 Credit Hours.**

This rotation (Internal Medicine Boot Camp) is a 4-week elective restricted to students who will begin a categorical internal medicine residency in July of that same academic year. The purpose of the course is to present the diagnosis and management of common medicine topics that an IM intern can expect to encounter during residency, enhance differential diagnosis skills of common chief complaints seen on a medicine service, and develop procedural skills and patient evaluation skills. Students are expected to attend all scheduled conferences and interactive laboratory and clinical sessions focused on procedural skills and clinical assessment of standardized patients. Clinical skills labs will include heart sounds using Harvey manikin, intubation, mechanical ventilation, PFT, joint aspiration and placement of central lines. Students will receive training in BLS and ACLS and can receive certification if all classes are attended and performance is satisfactory. Students are required to give an oral presentation on a medicine topic/clinical question. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4201. ECG Interpretation-RAHC. 2 Credit Hours.**

This rotation is designed for students whom have basic to intermediate expertise in reading ECG's and who are motivated to enhance this expertise through independent study. Students have the opportunity to become proficient in the interpretation of ECG's through daily self-study of electrocardiograms. The ECG's are referenced from the textbook: Clinical Electrocardiography - Review and Study Guide, Franklin H. Zimmerman, McGraw-Hill, 2nd ed, 2004, ISBN 0-07-142302-8. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4204. Geriatrics/End of Life - RAHC. 4 Credit Hours.**

This rotation offers clinical experience in both geriatric medicine and palliative medicine. For the geriatric portion, the student is required to participate in the care of patients in a clinic, a nursing home, with home health agencies, and will have didactic educational activities. For the end-of-life portion, the student is required to work with professionals from different disciplines involved in a hospice-affiliated with the Harlingen teaching hospital (VBMC). Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4206. Office Cardiology-RAHC. 4 Credit Hours.**

The student will work with a cardiologist in solo or group practice and will participate in the evaluation of patients with cardiac symptoms and disease. The student will have full-time participation in clinics, consultations, ECG interpretation, non-invasive cardiac test interpretation, and possible observation in the cardiac catheterization laboratory. The student is expected to learn the pathophysiological approach to the diagnosis and management of disease of the cardiovascular system, a detailed assessment through history and detailed cardiovascular physical exam, and interpretation of diagnostic tests. If rotation is done as the Ambulatory Selective, the student is required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4207. Office Endocrinology-RAHC. 4 Credit Hours.**

The student will work with an endocrinologist in solo or group practice and is required to participate in the evaluation of patients with endocrine disease. The student will have full-time participation in clinics, consultations, and endocrine test interpretation. The student is expected to learn the diagnosis and management of disease of the endocrine system, patient assessment through a detailed history and physical exam, and interpretation of tests. Exposure to patients with pituitary and hypothalamic disease, thyroid disease, abnormalities in calcium metabolism, adrenal disease, diabetes, and lipid disorders may be seen. If rotation is done as the Ambulatory Selective, the student is required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4208. Office Gastroenterology-RAHC. 4 Credit Hours.**

The student will work with a gastroenterologist in solo or group practice in Harlingen or in McAllen. The student is required to participate in the evaluation of patients with gastrointestinal diseases, liver disease, and diseases of the pancreas. The student will have full-time participation in clinics, consultations, and special gastrointestinal diagnostic techniques. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. If rotation is done as the Ambulatory Selective, the student is required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4209. Intermediate ECG Interpretation-RAHC. 0.5 Credit Hours.**

Each session will consist of discussions of examples of ECG tracings covering topics of hypertrophy, atrial arrhythmia, ventricular arrhythmia, conduction abnormality, ischemia, injury, infarction and pacemakers.

**MEDI 4210. Office General Medicine - RAHC. 4 Credit Hours.**

The student will work with general internists at Su Clinica Familiar clinic and is required to participate in the evaluation of patients with common internal medicine problems. The student is required to participate full-time with a mixture of day and evening clinics. The student is required to independently evaluate patients, present findings to the attending physician, document notes in the medical record, and participate in the management discussion and any procedures related to the patient. Students will have exposure to community resources for special problems encountered by the patients in obtaining health care and be able to identify different types of medical delivery systems. The student will be required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4211. Office Nephrology-RAHC. 4 Credit Hours.**

The student will work with a nephrologist in a solo or group practice and are required to participate in the evaluation of patients with a variety of renal diseases including hypertension, acute and chronic renal failure, acid-base disturbances, fluid and electrolyte disturbances, and glomerular disease. The student will have full-time participation in clinics, consultations, special diagnostic procedures, and the dialysis unit. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. If rotation is done as the Ambulatory Selective, the student is required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4213. Office Pulmonary Medicine - RAHC. 4 Credit Hours.**

The student will work with a pulmonologist in solo or group practice, and is required to participate in the evaluation of patients with acute and chronic lung diseases. The student will have full-time participation in clinics, inpatient hospital consultations, and various diagnostic methods. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. The student will be expected to become proficient in the interpretation of chest x-rays, pulmonary function tests, the evaluation of common pulmonary disorders, and the principles and methods of respiratory therapy, antimicrobial therapy, and arterial blood gases. The student may also have exposure to bronchoscopy, thoracentesis, pleural biopsy, and radionuclide testing. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4214. Office Rheumatology-RAHC. 4 Credit Hours.**

The student will have the opportunity to work with a rheumatologist in solo or group practice and is required to participate in the evaluation of patients with rheumatologic disease. The student will have full-time participation in clinics, consultations, and special diagnostic techniques. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. The student is expected to become proficient in the differential diagnosis and treatment of rheumatic and autoimmune diseases. If rotation is done as the Ambulatory Selective, the student is required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4215. Valley Aids Council-RAHC. 4 Credit Hours.**

The student will have the opportunity to work in the AIDS clinic with an internal medicine physician who specialized in the care of patients with HIV disease. This rotation will provide experience in the diagnosis and treatment of HIV disease and complications such as PCP, CMV, toxoplasmosis, invasive fungal infections, mycobacterial disease, and oncological and neurological complications of HIV disease. The student will have full-time participation in clinics and consultations. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. Students will also have exposure to community resources for the special problems encountered by the patients in this clinic and be able to identify different types of medical delivery systems. If the rotation is done as the Ambulatory Selective, the student will be required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 4216. Office Hematology-Oncology -RAHC. 4 Credit Hours.**

The student will have the opportunity to work with a hematologist/oncologist in solo or group practice in Harlingen or in McAllen. The student is required to participate in the evaluation of patients with hematologic disease and malignancies through daily clinics, consultations, interpretation of special clinical, and laboratory procedures. Students are required to perform appropriately focused history and physical exams, prepare written and verbal presentations, interpret laboratory data, and develop differential diagnosis and management plans on all assigned patients. If rotation is done as the Ambulatory Selective, the student is required to prepare a written essay based upon specific course objectives concerning systems of care. Essays must be submitted on the last day of the rotation and are required to receive a passing grade in the course. Students must meet expectations of clinical performance and professional behavior based on School of Medicine evaluation for fourth year students to "pass" course.

**MEDI 7000. Off Campus. 4 Credit Hours.**

All off campus rotations must be approved by the designated faculty member prior to the beginning of the rotation (at least one week before the course begins). Credit will not be given for any rotation that has not been approved in advance. Required paperwork includes: "Course Approval" form, a written letter or email for acceptance from the physician preceptor with the start and end dates of the course/rotation, and a course description of your learning objectives and responsibilities during the rotation. Forms must include a complete address and telephone number for the off campus location or residence address for the student while at the off campus site. Forms will not be approved after the rotation has already begun. Contact the department for assistance with enrolling in this course.

**MICR Courses****MICR 4000. Special Topic. 4 Credit Hours.**

This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

**MICR 4002. Advanced Medical Microbiology. 4 Credit Hours.**

This elective is available to selected fourth-year students. Responsibilities during the period would include 1) the reading of 20-25 short articles out of Morbidity & Mortality Weekly Reports (generally 5-7 pages each), so as to be prepared to 2) lead discussions as MS1 students present summaries of these articles (1 article per student in a small group setting). In addition to enriching the curriculum of the first-year class, this elective will provide the MS4 student with the opportunity to be updated on some of the most current issues of the day in areas of infectious disease.

**MICR 5003. Core Concepts In Microbiology & Immunology. 4 Credit Hours.**

This course will provide an integrated view of the microbial world and the mammalian immune response. Students will receive a foundation in the basic concepts and experimental approaches that are crucial for understanding core concepts in pathogenic microbiology, virology, parasitology, mycology, and immunology through directed readings and didactic instruction. A special emphasis will be placed on integrating knowledge from each discipline using specific examples to illustrate important concepts in host-pathogen interaction.

**MICR 5013. Microbiology. 4 Credit Hours.**

Foundation in immunology, bacteriology, virology, and mycology for all subsequent teaching of microbial pathology and oral infectious diseases is presented. Relevant aspects of preventive medicine and public health are included. Course Fees: Lab fee: \$32.

**MICR 5025. Eukaryotic Pathogens. 1 Credit Hour.**

The course will provide students with the opportunity to gain a basic comprehensive understanding of parasitology and mycology. The first part of this course will focus on virulence mechanisms and the host immune response with respect to a variety of parasites that cause major human diseases. The second part of this course will cover several important areas of medical mycology including molecular biology, diagnostic/epidemiology, mating/phenotypic switching, morphology, pathogenesis, and antifungal therapies.

**MICR 5026. Bacterial Pathogenesis. 1 Credit Hour.**

This is an introductory course in microbial pathogenesis focusing on bacterial pathogens that are important in human disease. Students will receive a foundation in the basic concepts and experimental approaches that are crucial for understanding the discipline through directed readings and didactic instruction. Specific concepts, strategies, and mechanisms used by human bacterial pathogens to cause disease will be illustrated.

**MICR 5027. Immunology. 1 Credit Hour.**

This course will focus on fundamental concepts in immunology with emphasis on experimental strategies for elucidating the cellular and molecular mechanisms underlying immune responses. Lecture topics will illustrate important concepts in innate immunity, cytokine signaling, antigen recognition and presentation, the genetics of immune receptors and the major histocompatibility complex, immunity to infection, and immunopathology (e.g., hypersensitivity, autoimmunity, immunodeficiency, etc.).

**MICR 5028. Virology. 1 Credit Hour.**

This course focuses on the molecular and cellular biology of animal viruses, and their interactions with host cells. Many of the viruses to be covered in this course are medically significant or have provided critical information that has expanded our understanding of cell biology, immunology, development, and differentiation.



**MICR 5029. Building Scientific Thinking Skills. 2 Credit Hours.**

The goal of this course is to provide the opportunity for graduate students to develop critical thinking skills in reading scientific literature, developing/critiquing scientific ideas and grant proposals and effectively communicating one's own scientific ideas with peers. The courses will be offered in three consecutive stages. First, each student will be assigned/encouraged to read articles focusing on a topic in the areas of Microbiology and Immunology and give a 50 minute review presentation on the topic to the class followed by questions/critiques from fellow students and faculty members. Second, each student is guided to develop a mini-proposal on a chosen topic followed by written critiques from fellow students and faculty members. Finally, each student is arranged to give an oral defense of his or her written proposal to the class followed by questions from fellow students and faculty members. Since the proposal writing and defense portions mimic the process involved in M&I track qualification examination, this course will not only have a long lasting impact on the students' scientific skill development, but also help prepare the students for the immediate qualification examination.

**MICR 5030. Microbiology And Immunology Track Journal Clubs. 0.5 Credit Hours.**

The MI track students, together with faculty members and other researchers, will meet once a week to discuss articles on life science with an emphasis on the Microbiology and Immunology disciplines. At each meeting, an individual will present one or several papers, or a review and related materials. The presentation will be followed by questions and discussions involving everyone present at the meeting. Each meeting is scheduled for one hour.

**MICR 5031. Pathogenic Microbiology. 3 Credit Hours.**

This lecture-only course integrates different disciplines (immunology, cell biology, genetics, biochemistry, molecular biology, physiology, and medical microbiology) with a central theme focused on molecular mechanisms of microbial pathogenesis in humans. Recommended prerequisites for this course are Biochemistry and Molecular Biology.

**MICR 5035. Emerging Trends in Immunology and Infection. 2 Credit Hours.**

An intense and advanced exploration of the primary literature focusing on the latest emerging trends in immunological research. The format will allow students to develop skills of in depth critical analysis and will involve a combination of student presentations of current data and discussions of the historical development and evolution of new directions in immunological research.

**MICR 5051. Intro To Immunology. 2 Credit Hours.**

This course is a study of immune responses with emphasis on experimental strategies for elucidating cellular and molecular mechanisms. Three phases of study: (1) immunochemistry and molecular biology of antibodies, lymphocyte receptors, and products of the major histocompatibility complex; (2) cellular interactions and immunoregulation; and (3) immunopathologies (hypersensitivity, autoimmunity, immunodeficiency, transplantation rejection, and tumor immunology). Prerequisites: consent of instructor, courses in General Biology and Genetics recommended.

**MICR 5090. Acquiring Presentation Skills. 1 Credit Hour.**

This course is designed to prepare the student for giving a scientific lecture or seminar. Students present at least one lecture per academic year. Each student is coached and evaluated by faculty members in terms of both effective public speaking and critically analyzing scientific data. In addition, the seminars are videotaped. Students are required to attend all seminars.

**MICR 5091. Current Topics In Microbiology And Immunology. 0.5-3 Credit Hours.**

Students will be given an opportunity to gain in-depth understanding of selected topics in microbiology and immunology through a combination of library research and discussion with faculty. Prerequisites: consent of instructor.

**MICR 5092. Special Problems. 1-9 Credit Hours.**

The course provides an opportunity for the student to engage in a special research project or to develop proficiency in the use of certain laboratory methods. Prerequisites: consent of instructor.

**MICR 5095. Current Topics in Immunobiology and Host-microbe Interactions. 1 Credit Hour.**

This course is designed to enhance and expand on the existing Acquiring Presentation Skills (APS) course (MICR 5090) that is required of all graduate students in the Infection, Inflammation, & Immunity discipline of the IBMS Graduate Program, and the Ph.D. students of the Microbiology & Immunology Graduate Program. Although the APS course allows students to gain experience with regard to making formal lecture presentations of their research, it is limited in that students present their work only once a year, the opportunity for full discussion is limited by the time available after presentations, and being a course in which participants are exclusively students, there are no opportunities to observe examples of how skilled seasoned investigators (i.e., faculty and postdoctoral fellows) present their work. In the currently proposed course, graduate students will not only have more frequent opportunities to present their own research and receive vital feedback and critiques, but will also hear and critique presentations by more senior investigators regarding projects performed in labs throughout the Department of Microbiology & Immunology.

**MICR 6022. Advanced Microbial Physiology. 2 Credit Hours.**

This course consists of readings and conferences. The course includes current concepts and experimental studies in microbial structure-function relationships and regulatory mechanisms. Prerequisites: consent of instructor.

**MICR 6024. Advanced Microbial Genetics. 1-4 Credit Hours.**

This course consists of lectures and conferences. This course is an in-depth study of selected areas of microbial genetics, and presentation and discussion of current literature in these areas. Prerequisites: Consent of instructor.

**MICR 6026. Advanced Molecular Genetics Of Eukaryotic Pathogens. 2 Credit Hours.**

This course will cover the major research methods and techniques used to study human fungal pathogens.

**MICR 6043. Advanced Topics In Virology. 2 Credit Hours.**

This course is an in-depth study of selected topics in animal virology at the molecular level. Prerequisites: consent of instructor.

**MICR 6050. Advanced Topics In Tumor Immunology. 1 Credit Hour.**

This course provides an opportunity for students to gain a solid foundation in modern tumor immunology. Topics include tumor antigens, autoimmunity, mechanisms of killing, dysregulation of inflammation, and counter measures mediated by tumor to thwart or subvert host immunity.

**MICR 6052. Advanced Immunobiology. 3 Credit Hours.**

This course consists of lectures only. This course is an in-depth study of the immune system and how it is regulated, including presentation and discussion of current literature in these areas. Prerequisites: MICR 5051 or consent of instructor.

**MICR 6071. Supervised Teaching. 1-9 Credit Hours.**

This course consists of teaching under the close supervision of instructors as laboratory assistants and as leaders in tutorial or review sessions. The more advanced students may present formal lectures in the classroom or lead discussions in the laboratory. Prerequisites: consent of chair or department.

**MICR 6091. Seminars In Microbiology & Immunology. 1 Credit Hour.**

Presentations and discussions of recent advances in various areas of Microbiology & Immunology. Invited speakers may be from inside or outside the HSC. Each graduate student in the M&I Track is expected to register for this course each fall and each spring semester for as long as the student is enrolled in graduate school.

**MICR 6097. Research. 1-12 Credit Hours.**

This course consists of independent, original research under the direction of faculty advisor. May be conducted in bacteriology, virology, mycology, parasitology, and immunology.

**MICR 6098. Thesis. 1-12 Credit Hours.**

Registration for at least one term is required of M.S. candidates. Admission to candidacy for the Master of Science degree is required.

**MICR 7099. Dissertation. 1-12 Credit Hours.**

Registration for at least two terms is required of Ph.D. candidates. In addition, Ph.D. candidates may be required to complete a course in Biostatistics. Prerequisites: Admission to candidacy for the Doctor of Philosophy degree.

**OBGY Courses****OBGY 3005. Obstetric/Gynecology Clerkship. 6 Credit Hours.**

A clerkship consisting of gynecology and obstetrics is provided for medical students who have successfully completed the course in reproductive physiology and pathophysiology. The goal of the clerkship is to provide students with opportunities to prepare to function as a house officer capable of providing preventive care and treatment or competent to identify the patient's need for direction into an appropriate care environment. Supervised direct patient experience occurs in the obstetrical wards, operating room, labor and delivery suite, emergency room, and the obstetrical, gynecologic, family planning, and cancer detection clinics. A guide identifying instructional goals and the mechanisms to reach them is provided. Twenty-five seminars provide the opportunity for integration of clinical experience and didactic learning. In order to enroll, students must have successfully completed all required preclinical courses.

**OBGY 4000. Special Topic. 4 Credit Hours.**

This course will need to be arranged with a designated faculty member(s) of the students choosing, meeting certain criteria prior to enrolling and getting permission to register. Research topics include but are not limited to PCOS, Teen Pregnancy, STDs, Pre-Eclampsia, Pre-Term Labor, Post Partum Depression, or any other OB/GYN related topic. The student must choose a preceptor, decide on the topic, schedule, and what will be graded. Students will follow the schedule created by that preceptor for 4 weeks.

**OBGY 4001. Obstetrical Externship. 4 Credit Hours.**

This selective offers training and experience in the care of complicated and normal pregnancies and exposure to advanced obstetric techniques. It is designed primarily as a preparatory subinternship for students anticipating residency in Obstetrics and Gynecology. The student will have the opportunity to be an integral member of the obstetric service and function at the junior intern level under the supervision of the Obstetric Faculty and Chief Resident. Opportunity for direct participation in labor and delivery, outpatient clinics (high risk and routine), operative obstetrics, and obstetric sonography is provided. The student is required to attend patient-care conferences and didactic teaching rounds directed by the Obstetric Faculty, and will be required to give one seminar presentation. Additional prerequisite for non-HSC students is rank in the upper half of one's medical school class.

**OBGY 4007. Obstetric/Gynecology Research. 4 Credit Hours.**

This selective is designed to provide the opportunity to participate in either clinical or basic research currently conducted by the faculty in the Department of Obstetrics and Gynecology. Depending on the student's interest, an appropriate faculty member will be assigned as preceptor and will integrate the student into her or his ongoing research. The student is expected to be actively involved in the research and to prepare a formal oral or written presentation relative to their area of investigation.

**OBGY 4008. Reproductive Health & Gynecological Surgery. 4 Credit Hours.**

This selective gives broad experience in gynecologic surgery and primary women's healthcare. It offers a direct, hands-on opportunity to develop surgical and microsurgical skills. The student is required to be an active member of the gynecology service at the subintern level under the supervision of the Faculty Preceptor and the Chief Resident. Responsibilities will include participation in: 1) inpatient gynecologic, oncologic, and urologic surgeries and medical therapies; 2) outpatient procedures such as diagnostic laparoscopy, tubal sterilization, vaginal sonography, and hysteroscopy; 3) clinic-based care including annual gynecologic and breast examination, cancer screening, contraception, and treatment of sexually transmitted diseases; 4) treatment of acute gynecologic emergencies; and 5) rounds, patient care conferences, and didactic lectures. Additionally, the student will be given 16 hours of instruction in microsurgery using an animal model.

**OBGY 4009. Endo-Infertility Elective. 4 Credit Hours.**

This elective offers training and experience in Reproductive and Infertility. It is designed as an advanced course for students who have completed the core clerkship in Obstetrics and Gynecology, are interested in reproductive medicine, and anticipate a residency in Obstetrics and Gynecology. The student is required to work with faculty in the Division of Reproductive Endocrinology participating in patient consultations for infertility and is required to observe ongoing management of infertility. In addition, the students are required to learn laboratory techniques associated with andrology as well as in vitro fertilization. Hands-on microsurgery laboratory experience will be available. The student is required to attend the weekly Combined Reproductive Endocrinology and Infertility Conference, be present for surgeries on the faculty service as well as on the resident service, and participate twice weekly in the infertility clinic at the Downtown University Outpatient Center.

**OBYG 4010. Advanced Sonography. 4 Credit Hours.**

This elective offers training and experience in Obstetric Sonography. It is designed as an advanced course for students who have completed the core clerkship in Obstetrics and Gynecology and who are interested and anticipate a residency in Obstetrics and Gynecology. The student is required to work with the faculty in the Division of Obstetrics participating in patient consultations and observe ongoing management of patients. In addition, the student will have the opportunity to obtain hands-on experience in sonography. The student is required to attend weekly Gyn Rounds and Cesarean Section Conferences.

**OBYG 4011. Clin Obstetrics & Gynecology. 4 Credit Hours.**

This is a four-week preceptorship in General Obstetrics and Gynecology in Harlingen, Texas. Staff are all clinical faculty of the RAHC. The clinical experience will be in both obstetrics and gynecology and involve more responsibility for patient care than is provided for third-year students; it is designed to be a subinternship. Patients are low- and high-risk obstetrical patients, general gynecology patients, GYN oncology patients, and infertility patients. Students considering a career in Obstetrics and Gynecology, Family Practice or other primary care or surgical should consider this rotation. It is a high volume, "hands-on" rotation and students have the opportunity to fulfill the required selective for ambulatory care. Housing is furnished through the Area Health Education Center/South Texas Border Initiative.

**OBYG 4012. Gynecology/Oncology. 4 Credit Hours.**

This selective gives focused experience in surgical techniques as well as the critical care of gynecologic oncology patients. The goal of this rotation is to provide students with the opportunities to prepare to function as a house officer capable of diagnosing and managing patients with gynecologic malignancies. Students will also have the opportunity to prepare to become competent to identify a patient's need for direction into an appropriate care environment with a gynecologic/oncologist. The student is required to be a team member of gynecologic oncology service. It is a 7-term level under the supervision of gynecology/oncology faculty preceptors and the chief resident of that service. Responsibilities include inpatient gynecologic/oncology surgeries, inpatient gynecologic/oncology critical care, outpatient gynecologic/oncology clinic care, gynecology-radiation/oncology conference(s), and gynecologic/oncology rounds.

**OBYG 4013. Ob/Gyn Bootcamp. 4 Credit Hours.**

The purpose of this elective is to prepare senior medical students who are interested in a career in obstetrics and gynecology for their internship. This elective is a "bootcamp" that provides practical "hands on" surgical training and valuable experiences so students are ready to perform day 1 of their residency. Prerequisites: Students are required to have passed their required MS3 obstetrics/gynecology clerkship.

**OBYG 7000. Off Campus. 4 Credit Hours.**

All off campus rotations must be approved by the designated faculty member prior to the beginning of the rotation (at least one week before the course begins). Credit will not be given for any rotation that has not been approved in advance. Required paperwork includes: "Course Approval" form, a written letter or email for acceptance from the physician preceptor with the start and end dates of the course/rotation, and a course description of your learning objectives and responsibilities during the rotation. Forms must include a complete address and telephone number for the off campus location or residence address for the student while at the off campus site. Forms will not be approved after the rotation has already begun. Contact the department for assistance with enrolling in this course.

**ORTO Courses****ORTO 4000. Special Topic. 4 Credit Hours.**

This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

**ORTO 4003. Selective In Hand Surgery. 4 Credit Hours.**

The student participates as a team member on the Orthopaedic Hand Surgery Service of University Hospital. The student participates in the care of acute, traumatic, and elective reconstructive problems of the hand. Principles of examination of the hand and upper extremity, as well as patient management, are taught through clinical experience and gross dissection of the upper extremity. The student is required to attend core lectures on basic orthopaedics by orthopaedic faculty. No late drops. Prerequisite: ORTO 4005.

**ORTO 4005. Trauma, Fracture & Clinical Care. 4 Credit Hours.**

Participate as a member of an orthopaedic elective service team (including VA) for two weeks and two weeks as a member of the orthopaedic trauma service. On the elective service, the student will be assigned to a specific resident and faculty member to work in the outpatient clinics, on wards, and in surgery. Experience will emphasize both operative and nonoperative treatment. On the trauma service, the student will be assigned to a specific resident to work in the emergency room, trauma clinics, and operating room. Broad experience in assessment and care of extremity trauma will include fracture reduction and application of plaster casts. The student is required to also attend core lectures in basic orthopaedics by faculty. Reading material includes excerpts from Essentials of Musculoskeletal Care, as well as reading material required by a particular service. No late drops.

**ORTO 4006. Adult Reconstruction In Orthopaedics. 4 Credit Hours.**

Assigned to the Total Joint Service. Clinic exposure includes two half days of adult reconstruction clinic: one at UT Medicine and the second at University Clinic Downtown. Students are required to learn to conduct a thorough orthopaedic examination including preoperative and post-operative evaluations. Operative experience includes two or three days per week at University Hospital, Audie L. Murphy V. A. Hospital, and Santa Rosa Northwest. Students will scrub with and assist Dr. Marshall and/or Dr. Trick in the operating room. Procedures primarily include total hip and total knee replacement and revision as well as hip and knee arthroscopy. Learning objectives will focus on basic biomechanics, anatomy, and perioperative care. Will attend core lectures on basic orthopaedics by orthopaedic faculty. Reading material includes excerpts from Essentials of Musculoskeletal Care. No late drops.

**ORTO 4008. Pediatric Orthopaedics SRCH/UH. 4 Credit Hours.**

Students are assigned to work with one of the pediatric orthopaedic faculty for broad exposure in the essentials in pediatric orthopaedics. Students are required to attend outpatient clinics at Christus Santa Rosa Children's Hospital, University Clinic Downtown, and University Clinic. Students are required to perform preoperative workups, attend surgery, and attend conferences at Christus Santa Rose Children's Hospital. Both assessment and treatment of pediatric trauma, congenital conditions such as clubfoot and dislocated hip, spinal disease, and neurologic conditions such as cerebral palsy will be emphasized. Students are required to attend core lectures on basic orthopaedics by orthopaedic faculty. Reading material includes excerpts from Essentials of Musculoskeletal Care, as well as reading material required by a particular service. No late drops.

**ORTO 4009. Orthopaedics Research. 4 Credit Hours.**

The student will be assigned to the supervision of one member of the orthopaedic faculty to carry out either a basic or clinical research project. The content and scope of the project will be determined by the student and faculty member prior to the start of the rotation. Either basic or clinical studies may be undertaken. Students are required to attend core lectures in basic orthopaedics by faculty. Reading material includes excerpts from Essentials of Musculoskeletal Care, as well as reading material required by a particular service. No late drops.

**ORTO 4011. Sports Medicine Selective. 4 Credit Hours.**

Students are assigned to the Sports Medicine Service. Students are required to participate in the knee rehabilitation clinic, weekly training-room visits, and attend surgeries. Introduction to the diagnosis and treatment of joint instability as well as care of the athlete will be made. Students are required to attend core lectures in basic orthopaedics by faculty. A brief review paper on a sports subject related to the student's chosen field of study, researched and submitted in rough draft, is required. Reading material includes excerpts from Essentials of Musculoskeletal Care. No late drops.

**ORTO 4012. Orthopaedic Oncology. 4 Credit Hours.**

Students are required to participate as a member of Orthopaedic Oncology Service. Students are required to participate in initial evaluations, staging, biopsy and definitive treatment of patients with primary musculoskeletal tumors and cancer metastatic to bone. Regional anatomy, pathology, and initial patient evaluation are emphasized. Each student is required to prepare a case presentation and discussion. Clinical experience and surgical exposure will be included. Students are required to attend core lectures in basic orthopaedics by faculty. Reading material includes excerpts from Essentials of Musculoskeletal Care, as well as reading material required by this service. No late drops.

**ORTO 4014. Primary Care Orthopaedics. 4 Credit Hours.**

A thorough outpatient orthopaedic primary care experience working under direct faculty supervision in Outpatient Clinics, this rotation is ideal for the student who wishes to pursue a career in Primary Care Medicine. The focus will be on common outpatient orthopaedic disease of the upper extremity, spine, and lower extremity. In addition, students will be given the opportunity to learn to assess and treat sports injuries, orthopaedic disorders of children, and in the treatment of musculoskeletal tumors. No attendance in the operating room is required. Students are required to attend core lectures in basic orthopaedics by faculty. Reading material includes excerpts from Essentials of Musculoskeletal Care. No late drops.

**ORTO 7000. Off Campus. 4 Credit Hours.**

All off campus rotations must be approved by the designated faculty member prior to the beginning of the rotation (at least one week before the course begins). Credit will not be given for any rotation that has not been approved in advance. Required paperwork includes: "Course Approval" form, a written letter or email for acceptance form the physician preceptor with the start and end dates of the course/rotation, and a course description of your learning objectives and responsibilities during the rotation. Forms must include a complete address and telephone number for the off campus location or residence address for the student while at the off campus site. Forms will not be approved after the rotation has already begun. Contact the department for assistance with enrolling in this course.

**ORTO 7001. Orthopaedics Preceptorship. 4 Credit Hours.**

Students are assigned to a practicing orthopaedic surgeon or group from the Clinical Orthopaedic Faculty, either in San Antonio or out-of-town. The student is required to see patients in the surgeon's private office, participate in the care of patients in the emergency room, and be involved in surgical cases. Rotations available include (but not limited to) preceptorships in hand surgery, sports medicine, spinal surgery, total joint replacement, pediatric orthopaedics, and general orthopaedics. A rotation description from the selected site must be turned in to the Orthopaedic Student Administrator.

**OTOL Courses****OTOL 4000. Special Topic. 4 Credit Hours.**

Special topics in Otolaryngology-Head and Neck Surgery.

**OTOL 4001. Head & Neck Surgery. 4 Credit Hours.**

The course is a clinical experience in the outpatient, in-patient, and operative environments. The course is normally offered for those senior medical students who are interested in pursuing a career in the field, although the clinical experience is also valuable for students interested in primary care, ophthalmology, and applicable internal medicine subspecialties. The student clerk is a full participatory member of the clinical team and will gain valuable knowledge and experience in the diagnosis, medical, and surgical care of the patient with upper aerodigestive tract and related disorders. The student will have the opportunity to enhance her/his surgical technical skills, including emergency patient care. Clinical activities are available at both the University Hospital System and the VA Hospital. Clerkships at BAMC or WHAFMC are arranged through the institution's education office. Exposure to the breadth and depth of the field includes general and pediatric otolaryngology, rhinosinusology, head and neck oncologic surgery, otology, laryngology and bronchoesophagology, maxillofacial trauma, and facial plastic and reconstructive surgery.

**OTOL 4002. Otorhinolaryngology Research. 4 Credit Hours.**

The department offers students research opportunities in a diverse and wide range of clinical and basic science topics. Areas of on-going research include voice disorder, head and neck oncology, animal models in laryngo-tracheal stenosis, and clinical outcomes studies. New opportunities for research are present in the functional areas of otolaryngology and hearing science, head and neck surgery, laryngology, general otolaryngology, and facial plastic and reconstructive surgery.

**OTOL 7000. Off Campus. 4 Credit Hours.**

All off campus rotations must be approved by the designated faculty member prior to the beginning of the rotation (at least one week before the course begins). Credit will not be given for any rotation that has not been approved in advance. Required paperwork includes: "Course Approval" form, a written letter or email for acceptance form the physician preceptor with the start and end dates of the course/rotation, and a course description of your learning objectives and responsibilities during the rotation. Forms must include a complete address and telephone number for the off campus location or residence address for the student while at the off campus site. Forms will not be approved after the rotation has already begun. Contact the department for assistance with enrolling in this course.

## PEDI Courses

### **PEDI 3005. Pediatrics Clerkship. 6 Credit Hours.**

This third-year pediatric clerkship addresses issues unique to childhood and adolescence by focusing on human developmental biology, and by emphasizing the impact of family, community, and society on child health and well-being. Additionally, the clerkship focuses on the impact of disease and its treatment on the developing human, and emphasizes growth and development, principles of health supervision, and recognition of common health problems. The role of the pediatrician in prevention of disease and injury and the importance of collaboration between the pediatrician and other health professionals is stressed. During this clerkship, students spend time working in outpatient and inpatient settings.

### **PEDI 4000. Special Topic. 4 Credit Hours.**

This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

### **PEDI 4003. General Pediatrics Selective. 4 Credit Hours.**

The goal of the General Pediatrics Selective is to teach medical students the knowledge and skills to understand human growth and development and its clinical application from infancy through adolescence; to take a complete, accurate, and culturally-sensitive history from children and their families; and to perform complete and problem-focused physical examinations of infants, children and adolescents for common acute and chronic pediatric illnesses. Students will communicate effectively in written and oral form with physicians, patient families, and clinic staff; describe the influence of family, community, and society on child health and disease; incorporate strategies for health promotion and injury prevention into patient care; and refer to and coordinate care with subspecialists and community agencies. Students will interpret common radiologic studies and perform office-based diagnostic tests and minor procedures. Students will interpret common radiologic studies and perform office-based diagnostic tests and minor procedures. Students will be expected to demonstrate professional responsibility in working as a team member with other members of the General Pediatrics team, patients, and families. Students work Monday-Friday with faculty and residents in an academic clinic primarily in the acute care setting.

### **PEDI 4006. Pediatric Cardiology. 4 Credit Hours.**

The goal of the Pediatric Cardiology Selective is to improve the student's understanding of the pathophysiology and management of pediatric and congenital heart diseases. Clinical skills in cardiac auscultation, EKG interpretation, and chest x-ray interpretation will be emphasized primarily in the outpatient setting. The student will observe noninvasive techniques in diagnosis such as echocardiography and invasive procedures in the cardiac catheterization laboratory. The student will participate in didactic instruction and online materials to improve knowledge and skills. The student is expected to research a cardiology topic during the rotation, and give a presentation on findings to the group at the end of the rotation. Student learning will be further enhanced by participation in weekly multidisciplinary patient management conferences. The student will be expected to demonstrate professional responsibility in working as a team member with other members of the Pediatric Cardiology care team, patients, and families.

### **PEDI 4009. Pediatric Gastroenterology/Nutrition. 4 Credit Hours.**

The goal of the Pediatric Gastroenterology Selective is to increase the knowledge and skills of students in the diagnosis and management of gastrointestinal, liver, and nutritional disorders of children. Clinical teaching activity takes place in the inpatient setting, with opportunities to follow patients in the outpatient setting. The student will actively participate in evaluating and managing patients including observing endoscopy and other procedures if necessary. Required reading and discussion of study material with faculty will be expected. The student will participate in didactic sessions to enhance learning of common diagnoses. The student will be expected to demonstrate professional responsibility in working as a team member with other members of the Pediatric Gastroenterology team, patients, and families.

### **PEDI 4013. Pediatric Hematology/Oncology. 4 Credit Hours.**

The goal of the Pediatric Hematology/Oncology Selective is to develop knowledge and skills in diagnostic evaluation, therapy, and follow-up of hematology/oncology patients. Clinical activities will take place primarily in the outpatient setting. This is an opportunity for experience in blood and bone marrow morphological diagnosis, in techniques for bone marrow aspiration, and in administration of intravenous and intrathecal chemotherapy. The student will work with a multidisciplinary team to meet the complex psychosocial needs of this patient population. The student is expected to demonstrate professional responsibility in working as a team member with other members of the Pediatric Hematology/Oncology team, patients, and families.

### **PEDI 4015. Pediatric Hematology/Oncology Research. 4 Credit Hours.**

Previous experience with introductory adult or pediatric hematology/oncology courses preferred. The student will participate in a clinical or basic investigation project on a topic of interest to the student under the supervision of the medical staff. The research might utilize retrospective information on specific groups of patients treated at the Children's Cancer Research and Treatment Center, the Hematology Clinic, or the Bone Marrow Transplant Unit; or it may investigate in-depth a particular clinical or basic facet of a disease process.

### **PEDI 4016. Pediatric Allergy, Immunology, And Infectious Diseases. 4 Credit Hours.**

The goal of this Selective is to develop student skills in clinical and laboratory evaluation of hypersensitivity, infection, immunity, and inflammation, and in the management of allergic disease, infectious disease, primary and secondary immune deficiencies, rheumatologic conditions, and associated complicated complications. The scope of infectious diseases typically encountered includes community and hospital acquired infections, including post-surgical infections, infections in cancer and transplant patients, and HIV-infected children. The student will participate in outpatient clinics and inpatient consultations. The student will spend time in the laboratory covering bacteriology, virology, mycology, flow cytometry, and HLA typing. Scheduled conferences include weekly Case Management which will include presentation of patient cases to the faculty and care team. The student is expected to research a pertinent topic during the rotation and give a presentation on findings to the group at the end of the rotation. The student is expected to demonstrate professional responsibility in working as a team member with other members of the Pediatric infectious Disease, Allergy, and Immunology teams, patients, and families.

**PEDI 4018. Child Neurology. 4 Credit Hours.**

The goal of the Child Neurology Selective is to develop the knowledge and skills to evaluate and manage children with neurologic disorders. The student will distinguish normal from abnormal neurologic development; perform a skillful neurologic history and exam to distinguish normal from abnormal findings, peripheral from central nervous system lesions, and static from progressive neurologic dysfunction; identify temporary vs. chronic progressive neurological dysfunction; and recognize and manage neurological disorders that generally require referral. Students will be able to discuss the indications, side effects, and mode of action of commonly used medications in pediatric neurology; the indications for complex or expensive neurologic testing; and the pediatrician's role in prevention of neurologic disorders in children. Patient activity is primarily in the outpatient setting, but students will participate in consultations and care of select inpatients. Students are expected to demonstrate professional responsibility in working as a team members of the Pediatric Neurology care team, patient, and families.

**PEDI 4020. Pediatric Endocrinology. 4 Credit Hours.**

The goal of the Pediatric Endocrinology Selective is to develop the knowledge and skills needed to diagnose and manage disorders of thyroid/parathyroid, adrenal/gonad, growth (including hypopituitarism), and carbohydrate metabolism (including diabetes mellitus). Most patient care activity occurs in the outpatient setting with clinics focused on either diabetes (type 1, type 2, medial diabetes) or endocrine issues. Students will explain how to use a glucometer and insulin pump and how to perform growth and puberty stimulation tests. Directed reading is provided, and the patients are reviewed and the pertinent literature discussed at regularly scheduled conferences. Each student will present one interesting case at a weekly Case Conference. Students are expected to demonstrate professional responsibility in working as a team member with other members of the Pediatric Endocrinology team, patients, and families.

**PEDI 4022. Neonatal Research. 4 Credit Hours.**

This rotation is designed for students interested in laboratory or clinical research experience in Perinatal Medicine. The student will work directly under the guidance of a faculty member and be involved in data gathering, chart review, or lab work in the area of research in which the faculty is involved and commensurate with the student's experience and interests. The selective will provide opportunities for protocol development, literature review, data analysis, and learning through reading and student-faculty interaction. Students must arrange to work with a neonatal faculty member before contacting the department for permission.

**PEDI 4023. Neonatology. 4 Credit Hours.**

The goal of Neonatology Selective is to gain the knowledge and skills needed to evaluate and manage preterm and term infants requiring intensive care. Students will work neonatologists and their staff in the Neonatal Intensive Care Unit and participate as a member of the neonatal response team in attending high-risk deliveries and admitting babies to the NICU. All aspects of the medical and nursing care of the high-risk or fragile newborn will be open to the student for study. The student is expected to function at the level of a sub-intern. The student will also be encouraged to participate in the support and instruction of families and gain understanding of "life beyond the NICU" for these special babies. The preceptor will guide the student in selecting appropriate reading to enhance the experiential component of the selective. The student is expected to demonstrate professional responsibility in working as a team member with other members of the neonatal team, patients and families. Weekend and night call schedules are integrated with those of the pediatric house staff. Students will work 6 days/week with 1 day off. As the 4th weekend is off, this translates to 3 days off during the rotation. These 3 days may be used for interviews; additional days off for interviewing should not be expected.

**PEDI 4027. Pediatric Genetics. 4 Credit Hours.**

The goal of the Pediatric Genetics Selective is to develop student knowledge and skills in diagnosing and developing management plans for children with single gene disorders, chromosome abnormalities, multiple congenital anomalies, metabolic disorders, teratogenic exposures, developmental delay, intellectual disability, and autism. Most patient activity is in the outpatient setting, but students will participate in inpatient consultations. Patient encounters range from 45 minutes to 2 hours in length depending on the patient and the chief concerns. Students will participate in multidisciplinary clinics, including craniofacial anomalies clinic. Training in differential diagnosis includes use of online genetics databases and resources. Students are expected to demonstrate professional responsibility in working as a team member with other members of the Genetics team, patients, and families.

**PEDI 4029. Pediatric Pulmonology. 4 Credit Hours.**

The goal of the Pediatric Pulmonary Selective is to develop the knowledge and skills needed to diagnose and manage common pediatric pulmonary disorders. The emphasis will be on how to obtain pertinent history, the recognition of physical signs of pulmonary diseases, CXR, and blood gas evaluation, and the critical assessment of the data gathered. Students will participate in outpatient pulmonary clinics, including cystic fibrosis and asthma clinics, and will follow pediatric inpatients with pulmonary disorders. The practice of evidence-based medicine will be emphasized. Regularly scheduled didactic sessions will expand on topics encountered in patient care. Students are expected to demonstrate professional responsibility in working as a team member with other members of the Pulmonary team, patients, and families.

**PEDI 4031. Pediatric Nephrology. 4 Credit Hours.**

The goal of the Pediatric Nephrology Selective is to develop skills in diagnosis and management of common renal disorders in children as well as significant participation in the management of dialysis and kidney transplant patients. The student will learn the essential concepts in the pathophysiology and management of fluid and electrolytes and acid base disturbances. Most patient care activity occurs in the outpatient setting, but students will also participate in the management of inpatients. The student will learn histopathology of renal diseases through reviewing biopsies with pathologists. The student is expected to demonstrate professional responsibility in working as a team member with other members of the Renal team, patients, and families.

**PEDI 4036. Pediatric Critical Care. 4 Credit Hours.**

The goal of the Pediatric Critical Care Selective is to develop the skills needed to evaluate and manage critically ill infants and children with medical and surgical diagnoses. The student will actively participate in a multidisciplinary team in the Pediatric Intensive Care Unit. Students will enhance their knowledge and skills in invasive procedures, principles of mechanical ventilation, principles of resuscitation, pharmacology of critical care, and the pathophysiology of these diseases. The student will serve as a sub-intern, participating in daily rounds with the attending pediatric faculty. Directed reading and didactic materials will be provided. The student is expected to demonstrate professional responsibility in working as a team member with other members of the Critical care team, patients, and families.

**PEDI 4039. Child Abuse Pediatrics. 4 Credit Hours.**

The goal of the Child Abuse Pediatric Selective is to increase the student's awareness that maltreatment is a common cause of many acute, delayed, and chronic physical and mental health conditions. The student will recognize demographic risk factors, but will see child abuse as a medical diagnosis made by the history and physical examination. The student will learn the history and physical exam necessary to evaluate concerns for injury and neglect and document in the correct medico-legal format. The student will learn the reporting mandate, and know how to report to the appropriate agency(s). The student will understand that abuse and neglect have immediate, short term, intermediate term, and long term effects that extend out into adulthood. Most patient care activity occurs in the outpatient setting, but the student may participate in emergency room and inpatient consults. The student will participate in staffing with CPS and other investigators and may have the opportunity to observe court hearings. The student is expected to demonstrate professional responsibility in working as a team member with other members of the Child Abuse Pediatrics team, CPS investigators, patients, and families.

**PEDI 4040. Inpatient Pediatrics. 4 Credit Hours.**

The goal of the Inpatient Pediatrics Selective is to prepare the student for pediatric inpatient wards during residency by enhancing knowledge and skills needed to evaluate and manage basic inpatient pediatric diseases as well as improving clinical skills such as oral and written case presentation, physical examination, hand-offs, and incorporating evidence-based medicine into clinical practice. The student will demonstrate knowledge of procedure skills including but not limited to conscious sedation, incision and drainage, and lumbar puncture. The student will function at the level of a sub-intern. The student will participate in the care of inpatients, small-group didactics, an online clinical reasoning skills module, and various organized educational activities. The student will also be expected to spend two weeks in nursery focused on teaching 3rd year medicals students and the evaluation and management of newborns. The portion of the rotation spend on the inpatient floor will require flexibility in scheduling with some night shifts possible given the current variability in patient volume. The student will demonstrate professional responsibility in working as a team member with other members of the Inpatient Pediatrics team, patients, and families and recognize the importance of working as a highly-effective team to deliver safe, efficient, care. Students must have completed all core clerkships.

**PEDI 4074. Ahec Clinic Experience. 4 Credit Hours.**

The goal of the AHEC Clinic Experience Elective are to provide medical students with the knowledge and skills to understand human growth and development and its clinical application from infancy through adolescence; take a complete, accurate, and culturally-sensitive history from children and their families; and perform complete and problem-focused physical examinations of infants, children and adolescents for common acute and chronic pediatric illnesses. The student will interpret common radiologic studies and perform office-based diagnostic tests. Under the auspices of the UTHSCSA AHEC Program, this experience exposes students to the primary care of ambulatory patients at various AHEC clinical training sites in South Texas. Under the direct supervision of a Board Certified General Pediatrician, the student serves as the initial physician in the evaluation and management of a wide array of outpatient problems. This clinic experience may include associated inpatient experience, depending on the patient responsibilities of the physician. The student will be expected to demonstrate professional responsibility in working as a team member with other members of the pediatric team, patient and families. Information about training sites may be found on the AHEC websites: <http://www.uthscsa.edu/cstp/index.aspx>. Student must first receive permission from the Department of Pediatrics before contacting the AHEC Office (567-7819). Application must be made 6-8 weeks in advance of the date on which you want to start the rotation. Once the rotation is confirmed by the AHEC Office, the student will be given electric permission to go online and register for the course. On or before the first day of the rotation, the student will need to meet with Administrative Associate at the Center of South Texas Programs/AHEC Office (567-7819).

**PEDI 4100. Nutrition Readiness For Internship. 0.5 Credit Hours.**

This course will consist of four two-hour sessions that cover a variety of clinically oriented discussions and practical points of value to new interns. Topics are modified annually to cater for every year participants' areas of interest and upcoming internship. Reading material about topics of discussion will be distributed to students to review before the class to insure maximal participation in team based learning style. Topics to be covered: nutritional care of the surgical patient and TPN, nutrition in pregnancy, nutrition in special situations such as brain injury, encephalopathy, renal and liver disease, enteral nutrition and nutritional rehabilitation in growth and intestinal failure in short bowel patients.

**PEDI 4201. Community Pediatrics-RAHC. 4 Credit Hours.**

The Department of Pediatrics offers this 4-week rotation at the RAHC Division for students interested in the contextual and systemic dimensions of general pediatrics. Goals for this rotation are 1) To experience and gain an understanding of the social, cultural, economic, and family forces which impact the health status of children in the Lower Rio Grande Valley, 2) to experience and gain an understanding of how the financing and organization of the health care system succeeds or fails to deliver optimal care to children and families 3) to experience and gain an understanding of the community roles of the pediatricians- as a member of the health care team and as an advocate for children. Students will work with pediatricians in community practices. In addition to clinical work with patients, students will participate in business meetings of the practices, work with other members of the health care team (such as nurse practitioners, physicians assistants, and social workers), and participate with physicians in their hospital and other agency committee duties. Sites for this rotation will include a variety of pediatric offices, including community health centers and private practices.

**PEDI 4204. Pediatric Neurology-RAHC. 4 Credit Hours.**

The goal of the Pediatric Neurology Selective is to develop the knowledge and skills to evaluate and manage children with neurologic disorders. The student will distinguish normal from abnormal neurologic development; perform a skillful neurologic history and exam to distinguish normal from abnormal findings, peripheral from central nervous system lesions, and static from progressive neurologic dysfunction; identify temporary vs. chronic progressive neurological dysfunction; and recognize and manage neurological disorders that generally require referral. The student will be able to discuss the indications, side effects, and mode of action of commonly used medications in pediatric neurology; the indications for complex or expensive neurologic testing; and the pediatrician's role in prevention of neurologic disorders in children. The student will work with a pediatric neurologist in the community setting. The student will see patients with the neurologist in the office and visit local hospitals in response to requests for consultation. The preceptor will guide the student in selecting appropriate reading to enhance the experiential component of the selective. The student is expected to demonstrate professional responsibility in working as a team member with other members of the Pediatric Neurology care team, patients, and families. Facility in Spanish is desirable but not essential.

**PEDI 4205. Evidence Based Pediatrics-RAHC. 2 Credit Hours.**

The student will explore the ways in which the EMB process is used in clinical practice through assigned readings and clinical experience. The student will spend mornings in an ambulatory care practice. From each morning's clinical experience, the student will identify one or two clinical questions. In the afternoons, the student will work in the medical library to formulate an answerable question, develop a search strategy, locate relevant literature, select a journal article, evaluate the article using EBM formulas, and reach a conclusion about the clinical questions. The preceptor will review the findings with student in clinic the following morning. Culmination of the experience will be a case presentation in an appropriate forum such as a journal club or rounds.

**PEDI 4206. Pediatric Cardiology-RAHC. 4 Credit Hours.**

The goal of the Pediatric Cardiology Selective is to improve the students understanding of the pathophysiology and management of pediatric and congenital heart diseases. Clinical skills in cardiac auscultation, EKG interpretation, and chest x-ray interpretation, and chest x-ray interpretation will be emphasized primarily in the outpatient setting. The student will observe noninvasive techniques in diagnosis such as echocardiography. The student will work with pediatric cardiologists in the private practice setting. The student will see patients with the cardiologists in their office, and visit local hospitals with them as they respond to requests for consultation. Since many of the cardiac disorders managed in this practice are chronic in nature, the student will learn how children and their families cope with these conditions at home, in school and in the community at large. Preceptors will guide the student in selecting appropriate reading to enhance the experiential component of the selective. The student is expected to demonstrate professional responsibility in working as a team member with other members of the Pediatric Cardiology care team, patients, and families.

**PEDI 4207. Neonatology - RAHC. 4 Credit Hours.**

The goal of the Neonatology Selective is to gain the knowledge and skills needed to evaluate and manage preterm and term infants. The student will work with neonatologists and their staff in the Neonatal Intensive Care Unit. The student will participate as a member of the neonatal response team in attending high-risk or fragile newborn will be open to the student for study. All aspects of the medical and nursing care of the high-risk or fragile newborn will be open to the student for study. The student will also be encouraged to participate in the support and instruction of families to gain understanding of "life beyond the NICU" for these special babies. The preceptor will guide the student in selecting appropriate reading to enhance the experiential component of the selective. The student is expected to demonstrate professional responsibility in working as a team member with other members of the Neonatal team, patients, and families.

**PEDI 4208. Pediatric Critical Care-RAHC. 4 Credit Hours.**

The goal of the Pediatric Critical Care Selective is to develop the skills needed to evaluate and manage critically ill infants and children with medical and surgical diagnoses. Students will enhance their knowledge and skills in invasive procedures, principles of mechanical ventilation, principles of resuscitation, pharmacology of critical care and the pathophysiology of these diseases. The student will participate in daily rounds with the attending pediatric faculty. Directed reading and didactic materials will be provided. Students are expected to demonstrate professional responsibility in working as a team member with other members of the critical care team, patients and families.

**PEDI 4209. Pediatric Gastroenterology - RAHC. 4 Credit Hours.**

The goal of the Pediatric Gastroenterology Selective is to increase the knowledge and skills of students in diagnosis and management of gastrointestinal, liver, and nutritional disorders of children. The student will work with a pediatric gastroenterologist in the community setting. The student will see patients with the gastroenterologist in the office, and visit local hospitals in response to requests for consultation. The gastroenterologist's practice includes a broad array of children with gastrointestinal problems, including digestive and malabsorptive disorders, short-gut syndrome, congenital anomalies, cystic fibrosis, recurrent infections, inflammatory bowel disease, and failure to thrive. The student will gain clinical skills in interviewing, physical assessment, the use and interpretation of imaging studies, and the indications for and interpretation of endoscopic assessments. In addition, the student will learn how the gastroenterologist, as a specialist-consultant, interacts with referring physicians and agencies. Since many of the gastrointestinal disorders are chronic in nature, the student will learn how children and their families cope with these conditions at home, in school, and in the community at large. The preceptor will guide the student in selecting appropriate reading to enhance the experiential component of the elective. The student may have an opportunity to complete a small research project during the elective. The student will demonstrate professional responsibility in working as a team member with other members of the Pediatric Gastroenterology team, patients, and families. Facility in Spanish is desirable but not essential.

**PEDI 4210. Pediatric Inpatient Service - RAHC (Valley Baptist Medical Center - Harlingen). 4 Credit Hours.**

The goal of the Inpatient Pediatrics Selective is to prepare the student for pediatric inpatient wards during residency by enhancing knowledge of basic inpatient pediatric diseases as well as improving clinical skills such as oral and written case presentation, physical examination, hand-offs, and incorporating evidence-based medicine into clinical practice. The student will function at the level of a sub-intern. All clinical activity occurs on the inpatient unit.



**PEDI 4425. Community for Children at the Border and Beyond. 4 Credit Hours.**

This is a four-week elective rotation in International Children's Health and Community Pediatrics located in the Lower Rio Grande Valley. The purpose is to educate future physicians to provide compassionate, effective international leadership within community collaborations addressing children's rights and the social determinants of health in resource-poor communities and to provide opportunities to develop skills necessary for effective advocacy. Curriculum objectives include: rights of the child; social determinants; clinical care in resource-poor regions; the impact of poverty; immigration and violence; preparing for advocacy; fostering a culture of compassion and professional development through experiences that broaden a physician-in-training's view of health and illness. Objectives are addressed through didactics provided at the UTHSCSA RAHC, community outreach, advocacy projects, and individualized professional development counseling and goal setting. The elective also includes individually tailored Spanish classes and fieldwork with promotoras, community leaders, public health officials, and families. Advocacy is a large component of this elective. The participants work with community-based organizations on selected advocacy issues, such as child refugees and immigration, obesity and diabetes among the young, and medical-legal interventions for children and their families. Participants explore the sources of health, disease, and healing and examine models of public health and medical care on both sides of the border. Community for Children is not a clinical course, although there are opportunities to participate in patient care in clinics and hospitals, including home visits. CFC directors mentor participants during the rotation and beyond, providing tools and support for professional development. This elective is a signature program of the UTHSCSA Regional Academic Health Center's Community Medicine Educational Cooperative, in partnership with the UTHSCSA Department of Pediatrics, UT Health Science Center-Houston School of Public Health-Brownsville, Brownsville Community Health Center, Harlingen Pediatrics Associates, Hospital Infantil de Tamaulipas/Ciudad Victoria, Mexico, and Centro de Salud Tamaulipas, Mexico.

**PEDI 7000. Off Campus. 4 Credit Hours.**

All off campus rotations must be approved by the designated faculty member prior to the beginning of the rotation (at least one week before the course begins). Credit will not be given for any rotation that has not been approved in advance. Required paperwork includes: "Course Approval" form, a written letter or email for acceptance from the physician preceptor with the start and end dates of the course/rotation, and a course description of your learning objectives and responsibilities during the rotation. Forms must include a complete address and telephone number for the off campus location or residence address for the student while at the off campus site. Forms will not be approved after the rotation has already begun. Contact the department for assistance with enrolling in this course.

**PEDI 7002. Pediatric Developmental Disabilities. 4 Credit Hours.**

The goal of the Pediatric Developmental Disabilities Elective is to develop the knowledge and skills needed to assess and interpret findings of developmental-behavioral assessments, understand the neurological and genetic work-up, and become familiar with community resources for special needs children. The student will have the opportunity to participate in the developmental, neurological, and genetic evaluation of children with developmental-behavioral disabilities. Common developmental-behavioral disabilities encountered in this rotation may include Autism Spectrum Disorders, Attention-Deficit Hyperactivity Disorder, Global Developmental Delay, Intellectual Disability (formerly Mental Retardation), Learning Disabilities, Neural Tube Defects, and Cerebral Palsy. Patient care activity takes place in the outpatient setting. Students will also participate in key community site visits. In addition to core didactic sessions, students will have independent readings that complement their clinical activities. For electives occurring in June, July and August, the student will spend 1 week at Camp CAMP (Children's Association for Maximum Potential), a summer camp in the Texas Hill Country for children with a variety of disabilities. (All expenses are paid). Medical Students will be part of a medical team responsible for daily medical management of a "tribe" of children. The student must complete paperwork as required by Camp CAMP before attending.

**PEDI 7012. Pediatric Community Preceptorship. 4 Credit Hours.**

The goal of the Pediatric Community Preceptorship is to provide medical students with knowledge and skills to diagnose and manage patients found in the preceptor's practice; to understand the social, cultural, economic, and family forces which impact on the health status of children; and understand the community roles of the pediatrician, as a member of the health care team, and as an advocate for children. Students will actively participate in patient care in the office practice of board-certified pediatrician preceptors. Preceptorships are available with general pediatricians or with subspecialists. Preceptorship experience must be scheduled well in advance and may be 2 or 4 weeks in length, students must arrange to work with a preceptor before contacting the department for permission. All preceptors must have an adjunct faculty appointment with a medical school.

**PHYL Courses****PHYL 3014. Research in Endocrinology of Aging. Credit Hours.**

The course consists of student participation in research on glucocorticoid-induced gene expression during aging and food restriction.

**PHYL 3016. Ion Channel Research. Credit Hours.**

The course includes student participation in ongoing basic research on the molecular mechanisms of signaling pathways acting on ion channels. Techniques may include patch-clamp, electrophysiology, molecular biology and biochemistry.

**PHYL 4000. Special Topic. 1-42 Credit Hours.**

This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

**PHYL 4012. Molecular Endocrinology Research. 4 Credit Hours.**

The course consists of student participation in research on glucocorticoid-induced gene expression during aging and food restriction.

**PHYL 4016. Ion Channel Research. 4 Credit Hours.**

The course includes student participation in ongoing basic research on the molecular mechanisms of signaling pathways acting on ion channels. Techniques may include patch-clamp, electrophysiology, molecular biology and biochemistry.

**PHYL 5013. Dental Physiology. 6.5 Credit Hours.**

Lecture instruction in the basic concepts of cell and organ function and in the integrated function of mammalian organ systems is presented. The physiology of the nervous system is included. (Students may elect to substitute CSBL 5019 - Gross Human Anatomy for Graduate Students for this course.)

**PHYL 5017. Discovery Of Physiological Principles 3. 2 Credit Hours.**

This course consists of laboratory demonstrations and experiments in areas covered in Organ Systems Physiology 2 and acquisition of skills for analyzing and communicating the results of laboratory research. Corequisites: PHYL 5025.

**PHYL 5025. Organ Systems Physiology 2. 4 Credit Hours.**

This course is a continuation of the study, begun in Organ System Physiology 1, of the mechanisms that produce and control the functions of the body's organ system. Prerequisites: PHYL 5011, PHYL 5014, PHYL 5021, and PHYL 5024.

**PHYL 5041. Excitable Membranes. 1 Credit Hour.**

This course addresses fundamental mechanisms of cell excitability in neurons and other excitable tissues. The format is a combination of lectures, readings, discussions, a laboratory demonstration, and online simulations (where available). Examples of the latter include activities to simulate the resting membrane potential and action potentials. The module will emphasize contemporary issues in the scientific literature as well as translational science where dysfunction in ion channels underlie common disorders such as Alzheimer's Disease, Myasthenia Gravis, Cystic Fibrosis, Long QT Syndrome, and Epilepsy to name just a few. PHYL 5041 is a co-requisite for Fundamentals of Neuroscience I as it is the first module of that course, but it also can be taken as a standalone one-hour course.

**PHYL 5042. Cardiovascular Physiology. 1 Credit Hour.**

This course explores the physiological mechanisms by which the cardiovascular system carries out its principle function. Mechanisms that produce and regulate cardiac pumping, organ blood flow, capillary fluid and solute exchange, and arterial blood pressure are examined. The nature and importance of various local, neural, and hormonal mechanisms are emphasized. Integrated control of cardiovascular function in situations requiring cardiovascular adjustments (e.g., exercise, blood pressure alterations) are also covered. Students may take the full series but are only required to take three out of the four courses (PHYL 5041, 5042, 5043, and 5044).

**PHYL 5043. Respiratory & Renal Physiology. 1 Credit Hour.**

This course covers the physiology of respiratory and renal function in the human body. Our focus is on basic mechanisms of function, role in body homeostasis, as well as dysfunction of both systems associated with pulmonary and renal disease. Two sessions are set aside for discussion around significant advances in each field. One or more recently published articles will serve as the focus for each of these discussions sessions. Students may take the full series but are only required to take three out of the four courses (PHYL 5041, 5042, 5043, and 5044).

**PHYL 5044. Metabolism/Hormones/GI System. 1 Credit Hour.**

The course serves to expose students to the current state of knowledge in the field of endocrinology and metabolism, including reproductive physiology, and the related topics of the physiology of the digestive tract. Three sessions are assigned to advanced topics. In these three sessions students will engage in a discussion format centered around one recent important publication. The lecturer will lead the discussion with the aim of showing how the topics the students have been exposed to integrate one with another, providing the context for present-day discoveries.

**PHYL 5045. Mammalian Physiology. 4 Credit Hours.**

The course begins with fundamental processes that govern membrane transport, membrane potential, and excitation-contraction coupling. The course then proceeds to coverage of organ system function including cardiovascular, respiratory, renal, gastrointestinal and endocrine/metabolic physiology. Lecture material is enhanced by supplemental discussion of research literature encompassing molecular biology, integrative function, and pathophysiological implications. Students may take the full course but are only required to take three out of the four modules (PHYL 5041, 5042, 5043, and 5044).

**PHYL 6020. Regulation of Glucose Metabolism. 3 Credit Hours.**

The normal regulation of glucose metabolism will be reviewed integrating whole body, organ, cellular, and molecular control mechanisms. Dysregulation of these control mechanisms in diabetes and other common metabolic disorders such as obesity and the metabolic syndrome will be examined in detail. State-of-the-art in vivo and in vitro techniques essential for the study of normal and deranged glucose homeostasis will be discussed in depth. Diabetic microvascular (nephropathy, retinopathy, neuropathy) and macrovascular complications and their relationship to impaired glucose metabolism will be reviewed. Lastly, pharmacologic therapy of diabetes and its associated complications will be discussed.

**PHYL 6071. Supervised Teaching. 1 Credit Hour.**

A student enrolled in this course is expected to participate in the teaching program of the Department.

**PHYL 6090. Seminar. 1 Credit Hour.**

The course is comprised of research presentations by Physiology graduate students. This course is required of all students each semester.

**PHYL 6091. Selected Topics Of Physiology. 2 Credit Hours.**

Students must take a least two courses selected from among the offerings in: (1) Cardiovascular; (2) Cell Biology in Neural Science; (3) Endocrine and Metabolism; (4) Molecular Physiology; and (5) Ion Channels in Disease. Courses that may be substituted for one of these selections: (1) INTD 5040 - Fundamentals of Neuroscience I: Molecular, Cellular, and Developmental Neuroscience; (2) INTD 5043 - Fundamentals of Neuroscience II: Systems Neuroscience; (3) CSBL 6048 - Biology of Aging; and (4) CSBL 6058 - Neurobiology of Aging. Not all selected topics are offered each semester. Please discuss this with the Academic Coordinator for more details. Substituted courses in conflict with Physiology course schedule will require approval from COGS.

**PHYL 6097. Research. 1-12 Credit Hours.**

If a track chooses to give a seminar course, the specific course requirements will be determined by the track. The sub-designations for each track are: (1) Biology of Aging; (2) Cancer Biology; (3) Cell & Molecular Biology; (4) Genetics, Genomics & Development; (5) Membrane Biology & Cell Signaling; (6) Metabolism & Metabolic Disorders; (7) Microbiology & Immunology; (8) Molecular Biophysics & Biochemistry; (9) Molecular, Cellular, & Integrative Physiology; (10) Neuroscience; and (11) Pharmacology.

**PHYL 6098. Thesis. 1-12 Credit Hours.**

Registration for at least one term is required of M.S. candidates. Prerequisite: admission to candidacy for Master of Science degree.

**PHYL 6291. Seminar 2. 1 Credit Hour.**

Presentation and discussion of recent research advances by outside scientists.

**PHYL 7000. Off Campus. 1-42 Credit Hours.**

All off campus rotations must be approved by the designated faculty member prior to the beginning of the rotation (at least one week before the course begins). Credit will not be given for any rotation that has not been approved in advance. Required paperwork includes: "Course Approval" form, a written letter or email for acceptance from the physician preceptor with the start and end dates of the course/rotation, and a course description of your learning objectives and responsibilities during the rotation. Forms must include a complete address and telephone number for the off campus location or residence address for the student while at the off campus site. Forms will not be approved after the rotation has already begun. Contact the department for assistance with enrolling in this course.

**PHYL 7099. Dissertation. 1-12 Credit Hours.**

Registration for at least two terms is required of Ph.D. candidates. Prerequisites: admission to candidacy for the Ph.D. degree.

**REHB Courses****REHB 4000. Special Topic. 4 Credit Hours.**

Brain Injury Rehabilitation rotation will enable students to obtain experiences in the neurologic rehabilitation of persons with brain injury. Brain injury etiologies treated include traumatic brain injury, encephalopathy secondary to metabolic, toxic, and anoxic insults, aneurismal and AVM bleeds and occasional strokes. The rotation will involve significant neuromedical and rehabilitative involvement with inpatient care, brain injury consult service, outpatient care, and, as appropriate with care of low level brain injury patients.

**REHB 4001. Clinical Rehabilitation Medicine. 4 Credit Hours.**

This course is especially recommended for students planning to specialize in Family Practice, Neurology, Neurosurgery, Orthopaedics, Internal Medicine, or Rheumatology. The student will have the opportunity to participate in patient-care activities and limited exposure to electrodiagnostic procedures under the direct supervision of faculty and residents. The student will have exposure to Rehabilitation Medicine from an outpatient and consultative perspective and is required to attend teaching conferences, lectures, rounds, etc. (University Hospital and/or VA Hospital). No late drops will be accepted.

**REHB 4002. Introductory Inpatient Rehabilitation. 4 Credit Hours.**

This course is especially recommended for students planning to specialize in Family Practice, Neurology, Neurosurgery, Orthopaedics, Plastic Surgery, ENT, Internal Medicine or Rheumatology. The course will provide in-depth exposure to inpatient rehabilitation and the major rehabilitation areas. The course will include experience in diagnosis and comprehensive rehabilitation management of inpatients with strokes, spinal cord injuries, neurologic disorders, rheumatoid arthritis, amputations, chronic pain, and other major disabling conditions. The student must attend teaching conferences, lectures, and rounds. This selective will be tailored to specific student interest. Comprehensive work-ups and close follow-up of patients will be required (University Hospital). No late drops will be accepted.

**REHB 4003. Intro Pediatric Rehabilitation. 4 Credit Hours.**

This course is especially recommended for students planning to specialize in Pediatrics or Family Medicine. The course includes inpatient and outpatient experience emphasizing comprehensive team rehabilitation of children with spina bifida, childhood spinal cord injury, cerebral palsy, brain damage in childhood, juvenile rheumatoid arthritis, and other chronic disabling diseases of childhood and adolescence. The student must participate in patient care under supervision of faculty and residents and attend teaching conferences. This course includes exposure to adults with congenital conditions and mental retardation (Christus Santa Rosa Children's Hospital and University Hospital). No late drops will be accepted.

**REHB 4005. Combined Rehabilitation. 4 Credit Hours.**

The course is required for students planning to specialize in Physical Medicine and Rehabilitation and recommended for those desiring a broad Rehabilitation Medicine exposure. The course will provide an overview of the specialty of PM&R allowing faculty/resident-supervised participation in patient care activities related to Rehabilitation Medicine consultations, electrodiagnostic procedures, Inpatient Rehabilitation, and Pediatric Rehabilitation. Students must also attend teaching conferences, clinics, lectures, rounds, etc. (University Hospital, VA Hospital, Christus Santa Rosa Children's Hospital). No late drops will be accepted.

**REHB 4006. Intro Spinal Cord Injury. 4 Credit Hours.**

This course is especially recommended for students planning to specialize in Family Practice, Neurosurgery, Neurology, Orthopaedics, Internal Medicine, and Plastic Surgery. This rotation will provide the student with the opportunity to actively participate in the management of patients who have sustained a spinal cord injury. Working in a state-of-the-art spinal cord injury facility, students are required to participate in treating patients in virtually all aspects of their injury, from acute care, to rehabilitation evaluation and treatment, to eventual discharge and outpatient follow-up. Students must become an integral part of an interdisciplinary team under the supervision of faculty and residents (VA Hospital and/or University Hospital). No late drops will be accepted.

**REHB 4007. Hyperbaric Medicine & Wound Care. 4 Credit Hours.**

This course is designed to introduce the student to the principles of wound care, advanced wound therapies, and hyperbaric medicine. The student will have the opportunity to observe monoplace and multiple hyperbaric medicine treatments; will review theory of the use of hyperbaric in the 14 UHMS approved therapies. Complication and controversies of HBO use will be discussed in lecture format. The student is required to review common wound problems, diabetes infection, nutrition, venous stasis, and arterial insufficiency. Advanced treatment modalities will be observed and reviewed - wound vac, collagen, apligraf, OASIS, debriding agents. (University Center for Community Health {Texas Diabetes Institute}). No late drops will be accepted.

**REHB 4008. Rehabilitation Engineering. 4 Credit Hours.**

This course is especially recommended for students planning to specialize in Family Practice, Neurology, Neurosurgery, Orthopaedics, Internal Medicine, or Rheumatology. The student will have the opportunity to participate in patient-care activities and have limited exposure to orthotics, prosthetics, and pedorthotics procedures under the direct supervision of faculty and residents. The student will have exposure to Rehabilitation Medicine from an outpatient/inpatient perspective and is required to attend clinics to experience comprehensive rehabilitation management of inpatients with strokes, spinal cord injuries, neurologic disorders, rheumatoid arthritis, amputations, and other major disabling conditions requiring orthoses, prosthetics, and pedorthotics. The student will have exposure to the gait lab to experience research and an understanding of gait. (University Hospital and University Center for Community Health (Texas Diabetes Institute)). No late drops will be accepted.

**REHB 4009. Polytrauma. 4 Credit Hours.**

This course is recommended for students planning to specialize in PM&R, Neurosurgery, Neurology, Emergency Medicine, Orthopedics, Family Medicine or Internal Medicine. This course will enable students to obtain experiences in the neurologic rehabilitation of persons with brain injury, which includes traumatic brain injury and encephalopathy secondary to metabolic, toxic and anoxic etiologies.

**REHB 7000. Off Campus. 4 Credit Hours.**

All off campus rotations must be approved by the designated faculty member prior to the beginning of the rotation (at least one week before the course begins). Credit will not be given for any rotation that has not been approved in advance. Required paperwork includes: "Course Approval" form, a written letter or email for acceptance from the physician preceptor with the start and end dates of the course/rotation, and a course description of your learning objectives and responsibilities during the rotation. Forms must include a complete address and telephone number for the off campus location or residence address for the student while at the off campus site. Forms will not be approved after the rotation has already begun. Contact the department for assistance with enrolling in this course.

**SURG Courses****SURG 3005. Surgery Clerkship. 8 Credit Hours.**

The 12-week clerkship is divided into two 6-week rotations, one on general surgery and one on surgical specialties. Each of these rotations is then subdivided into two 3-week sessions with the general surgery rotation consisting of sessions on each of two different surgical services and the surgical specialties rotation including sessions on two different specialty services chosen electively from among seven surgical specialties. During this surgical clerkship, the student is afforded the opportunity to participate actively in the diagnosis and therapy of patients suffering from both acute and chronic surgical illness including both ambulatory and bedridden patients. The clerkship is interwoven with teaching ward rounds, clinical conferences, symposia, and a reading program with weekly examination and reviews on all aspects of surgery and the surgical specialties. The goals of the surgical clerkship are to provide students the opportunity to develop adequate knowledge, basic manual skills, and attitudes about surgical disease that should be encompassed by every practicing physician.

**SURG 4000. Special Topic. 4 Credit Hours.**

This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

**SURG 4002. Surgical Oncology. 4 Credit Hours.**

Senior students must function as "interns" on the surgical oncology service. They admit and discharge surgical oncology patients. They perform history and physical examinations, and keep daily records on surgical oncology patients. They follow patients in the outpatient clinics, in the emergency department, in the intensive care units and on general wards. They participate in operations for their patients. They participate in pre-and post-operative care of surgical oncology patients. They present cases, attend all conferences, and take call as designated by the surgical oncology service. They mentor third-year medical students on the surgical oncology service. They may participate in basic science research projects in the surgical oncology laboratory and in ongoing clinical trials of cancer diagnosis and management.

**SURG 4004. Supervised Basic Science Research. 4 Credit Hours.**

Senior students are required to participate in a basic science project in a research laboratory. Before students enroll in the course, they must contact a surgery faculty member with whom they want to conduct a basic science research project. In order to receive credit for this elective, a student must write a brief synopsis of the basic science research project including: research purpose, methodology, and project (report, abstract, presentation, experiments). The students must submit the synopsis with paperwork for approval of the elective. Midway during the elective {2 (or 4) weeks}, a student must submit a progress report to the Director of Surgical Education and the supervising surgery faculty member. At the end of the elective, a student will submit a final report to the Director of Surgical Education and to the supervising faculty member, Texas Diabetes Institute.

**SURG 4006. Supervised Clinical Science Research. 4 Credit Hours.**

Senior students are required to participate in a clinical science project. Before students enroll in the course, they need to contact a surgery faculty member with whom they want to conduct a clinical science research project. In order to receive credit for this elective, a student must write a brief synopsis of the clinical science research project including: research purpose, methodology, and project (report, abstract, presentation, clinical protocol). A student must submit the synopsis with paperwork for approval of the elective. Midway during the elective {2 (or 4) weeks}, a student must submit a progress report to the Director of Surgical Education and the supervising surgery faculty member. At the end of the elective, the student must submit a final report to the Director of Surgical Education and to the supervising faculty member.

**SURG 4007. General Surgery Selective-BAMC/Burn Unit. 4 Credit Hours.**

Senior students may take a general surgery clerkship at BAMC. They may also take a clerkship at the Burn Unit at the U. S. Army Institute of Surgical Research at Fort Sam Houston. Senior students function as "interns" on each service. They admit and discharge surgical patients. They perform history and physical examinations, and keep daily records on surgical patients. They follow patients in the outpatient clinics, in the emergency department, in the intensive care units, and on general wards. They participate in operations for their patients. They participate in pre-and post-operative care of surgical patients. They present cases, attend all conferences, and take call as designated by the service. Students who participate on the Burn Unit have good exposure to the diagnosis, resuscitation, and treatment of critically ill patients.

**SURG 4012. Oral Maxillofacial Surgery. 4 Credit Hours.**

Senior students function as "interns" on the oral maxillofacial surgery service. They admit and discharge oral maxillofacial patients. They perform history and physical examinations, and keep daily records on oral maxillofacial patients. They follow patients in the outpatient clinics, in the emergency department, in the intensive care units, and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of oral maxillofacial issues including outpatient sedation and anesthesia, dentoalveolar surgery, facial fractures, facial aesthetic and reconstructive surgery, management of facial and dental pain, and management of facial infections.

**SURG 4026. Plastic Surgery Selective. 4 Credit Hours.**

Senior students function as "interns" on the plastic surgery service. They admit and discharge plastic surgery patients. They perform history and physical examinations, and keep daily records on plastic surgery patients. They follow patients in the outpatient clinics, in the emergency department, in the intensive care units, and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of plastic surgery patients. They present cases, attend all conferences, and take call as designated by the plastic surgery service. They mentor third-year medical students on the plastic surgery service. They have exposure to a wide range of plastic surgery issues including complex wound management, aesthetic plastic surgery, facial fractures, reconstructive surgery of the head and neck, and breast, hand, and extremity.

**SURG 4031. Transplant Surgery Selective. 4 Credit Hours.**

Senior students function as "interns" on the transplant surgery service. They admit and discharge transplant patients. They perform history and physical examinations, and keep daily records on transplant patients. They follow patients in the outpatient clinics, in the emergency department, in the intensive care units, and on general wards. They participate actively in live renal and liver donor evaluation. They participate in operations for their patients, including liver resection and renal, pancreas, and liver transplants. They participate in the evaluation and procurement of the multiorgan cadaveric donor. They participate in pre- and post-operative care of transplant patients. They present cases, attend all conferences, and take call as designated by the transplant service. They present patients at formal multidisciplinary transplant rounds daily. They mentor third-year medical students on the transplant service. They have much contact with gastroenterologists and nephrologists who care for patients on the transplant service. The students rotate at University Hospital and Santa Rosa Northwest Medical Center.

**SURG 4037. Pediatric Surgery Selective. 4 Credit Hours.**

Senior students function as "interns" under private practice pediatric surgeons who are clinical faculty at the Health Science Center. They admit and discharge pediatric surgery patients. They perform history and physical examinations, and keep daily records on pediatric surgery patients. They follow patients in the outpatient clinics, in the emergency department, in the intensive care units, and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of pediatric surgery patients. They present cases, attend all conferences, and take call as designated by the pediatric surgery service. They mentor third-year medical students on the pediatric surgery service. This rotation is intended for students who seek a career in pediatric surgery or primary care pediatrics. Opportunities for clinical research projects are available. The students rotate at Santa Rosa Children's Hospital.

**SURG 4038. Rural Surgery Elective. 4 Credit Hours.**

In this rotation, senior students work with a private practice general surgeon in a rural setting. Senior students function as a "junior partners" on this general surgery service. They admit and discharge general surgery patients. They perform history and physical examinations, and keep daily records on general surgery patients. They follow patients in the outpatient clinics, in the emergency department, in the intensive care units, and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of general surgery patients. They take call as designated by the surgeon. The objectives of this rotation are: to introduce students to the socioeconomic problems that rural patients face with access to care, to discover how the internet and distance learning decrease isolation in rural communities, to encourage students to consider surgical practice in underserved rural communities. Housing for the student will be provided during the rotation.

**SURG 4040. Surgical Critical Care Selective. 4 Credit Hours.**

This course provides senior students with a broad exposure to surgical critical care. Students rotate through the surgical trauma ICU and have the opportunity to gain a great understanding of the principles and practice of surgical critical care. The student will have good exposure to cardiovascular and pulmonary physiology. They will have the opportunity to learn about modern concepts of resuscitation, ventilator management, vasopressor support, nutritional support, and infection control. They will have opportunity to place central lines, PA catheters, arterial lines, and perform intubation and bronchoscopy. They will have opportunity to examine and manage critically ill and injured patients in the ICU and keep medical records daily. They will have opportunity to present patients on formal rounds daily and participate in didactic critical care conference and trauma morbidity and mortality conference. They will have opportunity to take call as designated by the service.

**SURG 4042. General Surgery (UH). 4 Credit Hours.**

Students function as "interns" on this broad-based general and laparoscopic surgery service. They admit and discharge general surgical patients. They perform history and physical examinations, and keep daily records on general surgical patients. They follow general surgical patients in the outpatient clinics, in the emergency department, in the intensive care units, and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of general surgical patients. They present cases, attend all conferences, and take call as designated by the general surgical service.

**SURG 4043. General Surgery (Minimally Invasive Surgery- MIS). 4 Credit Hours.**

Students function as "interns" on this broad-based general and laparoscopic surgery service. They admit and discharge general surgical patients. They perform history and physical examinations, and keep daily records on general surgical patients. They follow general surgical patients in the outpatient clinics, in the emergency department, in the intensive care units, and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of general surgical patients. They present cases, attend all conferences, and take call as designated by the general surgical service.

**SURG 4044. General Surgery VA. 4 Credit Hours.**

Senior students function as "interns" on this broad-based general surgery VA service. They admit and discharge general surgical VA patients. They perform history and physical examinations, and keep daily records on general surgical VA patients. They follow general surgical VA patients in the outpatient clinics, in the emergency department, in the intensive care units, and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of general surgical VA patients. They present cases, attend all conferences, and take call as designated by the service. They mentor third-year medical students on the general surgical VA service.

**SURG 4047. Emergency Surgery. 4 Credit Hours.**

Senior students function as "interns" on this emergency and trauma surgery service. They admit and discharge surgical patients. They perform history and physical examinations, and keep daily records on surgical patients. Although students will examine most patients in the emergency department, students will also examine patients in outpatient clinics, in intensive care units, and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of emergency and trauma surgical patients. They present cases, attend all conferences, and take call as designated by the service. They mentor third-year medical students on the emergency and trauma surgery service.

**SURG 4048. Vascular Surgery University Hospital/VA Hospital. 4 Credit Hours.**

Senior students function as "interns" on each vascular surgery UH/VA service. They admit and discharge vascular surgery UH/VA patients. They perform history and physical examinations, and keep daily records on vascular surgery UH/VA patients. They follow vascular surgery UH/VA patients in the outpatient clinics, in the emergency department, in the intensive care units, and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of vascular surgery UH/VA patients. They present cases, attend all conferences, and take call as designated by the service. They mentor third-year medical students on the vascular surgery UH/VA service. Students have the opportunity to learn to perform a complete vascular physical examination and learn to interpret vascular diagnostic studies. They will have the opportunity to learn the finer details of endovascular treatment of vascular diseases.

**SURG 4049. Surgical Internship Readiness. 4 Credit Hours.**

The purpose of this elective is to prepare senior medical students who are interested in a surgical career for their surgery internship. This elective is a surgical "boot camp" to provide practical "hands on" experience for students. Prerequisites: general surgery subinternship; critical-care rotation. Students can do a critical care rotation in the SICU, MICU, PICU, or CCU. These mandatory prerequisites can occur at the Health Science Center or at a remote site.

**SURG 4052. Bariatric Surgery (DHR). 4 Credit Hours.**

Senior students function as "interns" under Bariatric surgeons at the Doctor's Renaissance Hospital (DHR). They admit and discharge surgical patients. They perform history and physical examinations, and keep daily records on surgical patients. They follow patients in the outpatient clinics, in the emergency department, in the intensive care units and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of surgical patients. They present cases, attend all conferences, and take call as designated by the surgical service. They may mentor third year medical students on the surgical service.

**SURG 4053. Colorectal Surgery (DHR). 4 Credit Hours.**

Senior students function as "interns" on this broad-based general and laparoscopic surgery service at the Doctor's Renaissance Hospital (DHR). They admit and discharge general surgical patients. They perform history and physical examinations, and keep daily records on general surgical patients. They follow general surgical patients in the outpatient clinics, in the emergency department, in the intensive care units and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of general surgical patients. They present cases, attend all conferences, and take call as designated by the general surgical service. They may mentor third year medical students on the service.

**SURG 4054. General Surgery (DHR). 4 Credit Hours.**

Senior students function as "interns" under private practice general surgeons who are clinical faculty at the Doctor's Renaissance Hospital (DHR). They admit and discharge surgical patients. They perform history and physical examinations, and keep daily records on surgical patients. They follow patients in the outpatient clinics, in the emergency department, in the intensive care units and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of surgical patients. They present cases, attend all conferences, and take call as designated by the surgical service. They may mentor third year medical students on the surgical service.

**SURG 4055. Surgical Critical Care (DHR). 4 Credit Hours.**

This course provides senior students with a broad exposure to surgical critical care at the Doctor's Renaissance Hospital (DHR). Students will rotate through the surgical trauma ICU and gain a great understanding of the principles and practice of surgical critical care. The student will have good exposure to cardiovascular and pulmonary physiology. They will learn about modern concepts of resuscitation, ventilator management, vasopressor support, nutritional support, and infection control. They will have opportunity to place central lines, PA catheters, arterial lines and perform intubation and bronchoscopy. They will examine and manage critically ill and injured patients in the ICU and keep medical records daily. They will present patients on formal rounds daily and participate in didactic critical care conference and trauma morbidity and mortality conference. They will take call as designated by the service.

**SURG 4056. Surgical Oncology (DHR). 4 Credit Hours.**

Senior students function as "interns" on the surgical oncology service at the Doctor's Renaissance Hospital (DHR). They admit and discharge surgical oncology patients. They perform history and physical examinations, and keep daily records on surgical oncology patients. They follow patients in the outpatient clinics, in the emergency department, in the intensive care units and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of surgical oncology patients. They present cases, attend all conferences, and take call as designated by the surgical oncology service. They mentor third year medical students on the surgical oncology service. They may participate in basic science research projects in the surgical oncology laboratory and in ongoing clinical trials of cancer diagnosis and management.

**SURG 4057. Vascular Surgery (DHR). 4 Credit Hours.**

Senior students function as "interns" on the vascular surgery service at the Doctor's Renaissance Hospital (DHR). They admit and discharge vascular surgery patients. They perform history and physical examinations, and keep daily records on vascular surgery patients. They follow vascular surgery patients in the outpatient clinics, in the emergency department, in the intensive care units and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of vascular surgery patients. They present cases, attend all conferences, and take call as designated by the service. They mentor third year medical students on the vascular surgery service. Students learn to perform a complete vascular physical examination and learn to interpret vascular diagnostic studies. They will learn the finer details of endovascular treatment of vascular diseases.

**SURG 4201. General Surgery-Harlingen. 4 Credit Hours.**

Senior students function as "interns" under private practice general surgeons who are clinical faculty at the Regional Academic Health Center. They admit and discharge surgical patients. They perform history and physical examinations, and keep daily records on surgical patients. They follow patients in the outpatient clinics, in the emergency department, in the intensive care units, and on general wards. They participate in operations for their patients. They participate in pre- and post-operative care of surgical patients. They present cases, attend all conferences, and take call as designated by the surgical service. They mentor third-year medical students on the surgical service.

**SURG 5001. Oral Maxillofacial Surgery Clinical Skills Course. 8 Credit Hours.**

The goal of Clinical Skills module is to develop the student's bedside diagnostic skills. As a result of course lectures, readings, labs, longitudinal preceptor experience, and other Clinical Skills (CS) activities, you will be able to: (1) Perform a full history and physical and recognize specific abnormalities; (2) Record the history and physical examination in a coherent, standardized manner; (3) Construct a problem list and differential diagnosis based on the history and physical exam findings; (4) Deliver a concise organized oral presentation of the history and physical and interpretation of the findings in a standardized format.

**SURG 7000. Off Campus. 4 Credit Hours.**

All off campus rotations must be approved by the designated faculty member prior to the beginning of the rotation (at least one week before the course begins). Credit will not be given for any rotation that has not been approved in advance. Required paperwork includes: "Course Approval" form, a written letter or email for acceptance from the physician preceptor with the start and end dates of the course/rotation, and a course description of your learning objectives and responsibilities during the rotation. Forms must include a complete address and telephone number for the off campus location or residence address for the student while at the off campus site. Forms will not be approved after the rotation has already begun. Contact the department for assistance with enrolling in this course.