

# AS.360 (INTERDEPARTMENTAL)

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## **AS.360.000. Pre-College E.S.L.. 1 Credit.**

Sharpen and refine your speaking, reading, listening, and writing skills, or improve your test scores. A separate application is required. Please contact 410-516-4548 for information or write [summer@jhu.edu](mailto:summer@jhu.edu).

## **AS.360.100. Neuroscience Applied: Designing and Communicating Theory and Research. 1 Credit.**

Science is about theory, research, data and storytelling. This course focuses on Neuroscience and its related topics –Cognitive Science, Psychology, Biology, Computer Science, Philosophy of Mind and Anthropology– as they can be applied outside of the traditional laboratory. Through research projects on a topic of their choice, students will experience hands-on creative problem solving through the scientific process and create and write their own research papers and scientific visualizations. It is strongly recommended to take this course in conjunction with the course "Mind, Brain, and Beauty" or any other course in the brain, psychological and behavioral sciences.

## **AS.360.105. Intro to Hopkins: Arrive & Thrive. 1 Credit.**

Explore the University. Engage with people. Empower yourself. Chart your expedition at Hopkins. In this freshman-only course, students will explore Hopkins' academic resources and opportunities to integrate their academic, career, and personal goals for college and beyond. Students will be exposed to topics including learning strategies, academic planning, and campus culture. Students will develop a personalized plan for success and make some new friends.

## **AS.360.107. Library Research and Research/Grant Proposal Writing. 1 Credit.**

This course offers training to undergraduate and graduate students in humanities and social sciences on the fundamentals of library research and research/grant proposal writing. The course will introduce the students to the major research resources in humanities and social sciences, strategies and techniques to conduct effective research, and how to use library research to enhance research and grant proposal writing. This course aims to help students learn the basics of research and grant proposal writing and develop useful research skills that will benefit them in the long run.

## **AS.360.111. Special Opportunities in Undergraduate Learning Tutorials. 1 Credit.**

### **AS.360.116. Neuroscience Applied - The Brain & Creativity. 1 Credit.**

What underlies our perception of visual art and music? Do specific properties of objects, scenes, and musical events evoke consistent emotional responses? Does the perception of beauty lie in the eye of the beholder? What can the creative, artistic process tell us about the mind/brain? Examining such questions from cognitive and computer sciences, neuroscience, psychology, and philosophy, we will explore relevant research, theory and data in the visual and auditory domains as they pertain to art perception and cognition, creativity, and artificial intelligence.

### **AS.360.118. Health Studies. 1 Credit.**

Most Americans were born in one and will die in one. Lots of you likely aspire to spend your careers in one. Hospitals stand at the center of modern health care as symbols of healing; below the surface, they perform all the technological and social functions of a miniature city. This class explores the past, present, and future of hospitals with a focus on Johns Hopkins, a global model for medical education and patient care. Area: Humanities, Social and Behavioral Sciences

### **AS.360.125. Scholars.**

Permission and separate application required. Please contact 410-516-4548 for information or write [summer@jhu.edu](mailto:summer@jhu.edu). No credit is earned for this course.

### **AS.360.133. Freshman Seminar: Great Books at Hopkins. 3 Credits.**

Students attend lectures by an interdepartmental group of Hopkins faculty and meet for discussion in smaller seminar groups; each of these seminars is led by one of the course faculty. In lectures, panels, multimedia presentations, and curatorial sessions among the University's rare book holdings, we will explore some of the greatest works of the literary and philosophical traditions in Europe and the Americas. Close reading and intensive writing instruction are hallmarks of this course; authors for Fall 2020 include Homer, Plato, Dante, John Donne, George Herbert, Christina Rossetti, Mary Shelley, Friederick Nietzsche, Isaac Bashevis Singer, Frederick Douglass.

Area: Humanities

Writing Intensive

### **AS.360.137. Mini-Term: Disease as Creativity in the Arts. 1 Credit.**

In this course, we will analyze the ways in which physiological and mental diseases have contributed to the creation of renowned works of art and literature through the ages as means of coping with illness.

Area: Humanities

### **AS.360.139. Medicine: An Integrative Approach. 1 Credit.**

Integrative medicine considers the human body not as a machine to be repaired when broken, but as a potent mind-body with extraordinary potential for high-level wellness, resilience under duress, and resistance to disease. Changing our disease-care model into a wellness model will be facilitated when we consider the vitality of soul and spirit to be as important as cellular function. We will explore a vision of medicine broader than that of the conventional model as it integrates the biological with the psychological aspects of human experience and focuses on the flourishing of human possibility. David Mercier, M.S., L.Ac., author of *A Beautiful Medicine*, winner of a Grand and Gold Prize in the 2013 Nautilus Book Awards, will be co-teaching this class with Medical Herbalist Geo Giordano, MSc, RH(AHG)

### **AS.360.140. Introduction to Orthopedics. 1 Credit.**

This two-week course is an immersion experience for high school students in the fascinating medical specialty of orthopaedic surgery. By the end of this course, students will be able to (i) describe important anatomic and physiological aspects of the musculoskeletal system, (ii) explain the pathogenesis and presentation of common musculoskeletal disorders, and (iii) indicate how to evaluate and manage a patient with a musculoskeletal disorder at a level appropriate for the high school student.

**AS.360.142. Drug Discovery and Development. 1 Credit.**

This interactive course will give students an introduction to the guiding principles of drug discovery and development. Topics will range from pre-clinical pharmacokinetic and pharmacodynamic considerations through clinical trial design, implementation, and analysis. Upon completion of this course, students will be able to define the path of drug discovery, while being able to identify and critically assess important factors to consider at each stage when moving a drug forward through the process.

**AS.360.143. Ethics and Public Health Research. 1 Credit.**

In this course, students will be introduced to principles of bioethics and ethical theory and their application to public health research and practice both in the U.S. and abroad. We will discuss how ethical considerations have evolved in research, practice, and academia and the systems in place to support ethical research and practice in the U.S. and abroad. The course will use a combination of lecture, discussion and student debates to encourage broad participation.

**AS.360.145. JHU EducationUSA Academy. 1 Credit.**

Course description: This course provides students who are new to the study of higher education in the United States with an overview of the field and its opportunities. We will explore various topics such as the history and diversity of colleges and universities, the admissions process, introduction to library research, and campus diversity. The course is comprised of guest lecturers, campus tours, readings, and writing workshops.

**AS.360.146. Epidemics, Pandemics, & Outbreaks. 1 Credit.**

We are in the midst of a global pandemic that has shifted the ways in which we move world and interact with others around the world. It is more important than ever to have a deeper understanding of how outbreaks, epidemics, and pandemics have evolved through reviewing select communicable (COVID-19, Ebola, Zika, and HIV) and non-communicable (diabetes, cancer, cardiovascular disease, injury, and mental health) diseases in public health around the world. We will review the global burden of these diseases and the various forms of prevention efforts undertaken by global and national organizations.

**AS.360.147. Freshmen Seminar: Adam Smith and Karl Marx. 3 Credits.**

This course will compare the ideas of Adam Smith, the most famous proponent of free trade and free enterprise, with those of Karl Marx, the greatest critic of capitalism. For freshmen only.

Area: Humanities, Social and Behavioral Sciences  
Writing Intensive

**AS.360.160. Neurobiology: Cellular & Behavioral. 1 Credit.**

Neurobiology studies the biological basis of nervous system structure and function. This course is a college seminar that will cover topics ranging from cellular neurophysiology to development to gross nervous system anatomy and clinical correlates. While not a formal lab course, we will use models and demonstrations to introduce students to the wonders of the brain. There are no prerequisites, but a background in biology is helpful. Students should be generally enthusiastic and uninhibited.

**AS.360.167. Physics of Sports. 1 Credit.**

Starting with an introduction to basic concepts in physics learn why a curve ball curves, why a ping pong ball dunks, how the speed and temperature of bobsled critically define its trajectory and dynamics, etc. The course will try to build general understanding of physics needed to explain various sports in a greater depth and to appreciate the amount of science and engineering that goes into designing sporting equipment.

Area: Engineering, Natural Sciences

**AS.360.168. Depression: Philosophical and Neurological Perspectives. 1 Credit.**

Depression has established environmental and neurological causes. Efforts to join the two typically ends at lifestyle or social factors, but what can be said beyond that? Sociopolitical power structures, zeitgeist, and culture all exert significant effects on our lives. This course seeks to join modern theories of depression from philosophical, politico-theoretical, and neuropsychiatric perspectives to form a holistic model of how depression exists in modernity.

**AS.360.172. Maximizing Student Entrepreneurship. 1 Credit.**

Maximizing Student Entrepreneurship is designed to teach students about the six core tenets of successful entrepreneurship - time management, team building, networking, purpose, operations, and financial management - via exposure to the ideas of successful entrepreneurs and venture capitalists, who will conduct Q&A sessions with the students on these topics.

**AS.360.174. Miracles of Modern Medicine. 1 Credit.**

The course is an introduction to the milestone discoveries and inventions in the history of modern medicine as well as the frontier of current medical research. The two-week course is composed of 10 teaching modules, each is designed and delivered by the scientists at Johns Hopkins Medical Institutions and Johns Hopkins University. Students will take interactive lectures, participate in group projects, perform hands-on activities, visit cutting-edge laboratories, and interact with scientists and physicians.

**AS.360.190. College Writing Workshop. 1 Credit.**

In College Writing, we will ask well-informed questions and attempt to answer those questions with the support of evidence. In the process, we will treat good writing not only as a product of good thinking, but also as a tool for effective communication. To that end, we will plan, draft, and revise original essays in several genres in order to create finished pieces of writing.

Area: Humanities

**AS.360.199. The Art and Science of Happiness. 1 Credit.**

This dynamic course provides students with life-changing insights and skills that have the potential to affect the quality and substance of their academic, personal, and professional lives. In addition to learning basic concepts from neuroscience, nutritional biochemistry, and positive psychology, students will learn practical skills in social intelligence, resilience, meditation. They will also learn how to think critically about commonly held views of success and happiness. With both lecture and experiential exercises, the course will provide students the opportunity to experience significant changes in mood, cognitive skills, self-awareness, and physical wellbeing.

**AS.360.220. An Introduction to the Counseling Profession. 1 Credit.**

This course is designed to provide students with an overview of the field of counseling as a profession. It will introduce students to and define the subject matter of counseling psychology, the target population the counseling professional seeks to serve, and the theories and technical tools that inform practice. Moreover, the course will provided students with an introduction to basic counseling skills.

**AS.360.223. Mini Term: Medicine, Sports, and Culture. 1 Credit.**

This course examines how medicine is practiced in different cultures around the world. In particular, we draw on theories and concepts from medical anthropology to study how these differences reveal alternative perspectives on the body, its health and its capabilities. To sharpen our inquiries into cultural differences surrounding bodily health, we look comparatively at the anthropology of sports and bodily performance. In looking at how concepts including illness, wellness, and injury differ across cultures, we consider, for example, how the bodily experience of pain not only varies according to societal beliefs and behaviors, but also changes as one pursues the limits of athletic performance. In addition to introducing how cultural anthropology engages with medicine and sports performance, this course enriches scientific interest in medicine by teaching students techniques of critical reasoning that powerfully investigate both how medicine is practiced and the cultural phenomenon of bodily health. Prior study in anthropology is not required.

**AS.360.247. Introduction to Social Policy: Baltimore and Beyond. 3 Credits.**

This course will introduce students to basic concepts in economics, political science and sociology relevant to the study of social problems and the programs designed to remedy them. It will address the many inequalities in access to education and health care, unequal treatment in the criminal justice system, disparities in income and wealth, and differential access to political power. The focus will be on designing effective policies at the national and local level to address these pressing issues. This course is open to all students, but will be required for the new Social Policy Minor. The course is also recommended for students who are interested in law school, medical school, programs in public health, and graduate school in related social science fields. This course does not count as one of the required courses for the Economics major or minor, but it is required for the Social Policy Minor. Cross list with Sociology, Economics and Political Science. Freshman, Sophomore and Juniors only.

Area: Social and Behavioral Sciences  
Writing Intensive

**AS.360.249. Basics of Medicinal Plant Pharmacology. 1 Credit.**

We will explore some of the commonly used herbal medicines which support our anatomy and physiology. One class will be devoted to pain management & the emerging use of Cannabinoids. JHU is currently performing a clinical trial on Mistletoe which we will be studying, as its use is widespread for cancer patients in Europe. We will review current scientific discoveries explaining the cellular pathways and mechanisms that these plants affect in healing. Therapeutic doses, appropriate uses, plus known drug-herb interactions will be highlighted. Students will gain some useful insights into staying well, thinking clearly and optimizing their personal performance during their academic years ahead.

**AS.360.300. Mini-Term: So you want to be a .... Dentist. 1 Credit.**

Participation in all aspects of dentistry designed to immerse students in the experience of being a clinical dentist. The experience will focus on 5 elements for immersion: Chair-side monitoring throughout multiple dental specialties, dental anatomy/radiology review, dental laboratory work, sterilization and OSHA protocols, and business dental management discussion in the changing insurance landscape.

**AS.360.308. Policy and Practice in Human Services. 3 Credits.**

This course will focus on the policies that frame human service programs and the methods that are used to deliver them. Students will be given the opportunity to review the challenges of implementing programs and reforms in government and to consider the impact human services have on the population served.

Area: Social and Behavioral Sciences

**AS.360.331. Methods for Policy Research. 3 Credits.**

This course will introduce students to quantitative methods for studying social policy problems. Topics to be covered include descriptive statistics and sampling, correlation and causation, simple and multiple regression, experimental methods, and an introduction to cost-benefit analysis. The emphasis will be on the selection, interpretation and practical application of these methodologies in specific policy settings, rather than with formal proofs. Methods will be reinforced by hands-on exercises using statistical software. Over the course of the semester, students will critically analyze policy reports and empirical research in a range of policy areas and learn how to present this research to a non-specialist audience. Finally, we will discuss the pros and cons of quantitative vs. qualitative methodologies. The course will conclude with group presentations that draw on all these skills. Enrollment restricted to Social Policy minors only.

Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences

**AS.360.339. Planets, Life and the Universe. 3 Credits.**

This multidisciplinary course explores the origins of life, planet formation, Earth's evolution, extrasolar planets, habitable zones, life in extreme environments, the search for life in the Universe, space missions, and planetary protection. Recommended Course Background: Three upper level (300+) courses in sciences (Biophysics, Biology, Chemistry, Physics, Astronomy, Math, or Computer Science)

**Prerequisite(s):** Students may not register for this class if they have already received credit for AS.020.334 OR AS.020.616 OR AS.171.333 OR AS.171.699 OR AS 270.335 OR AS.360.671

Area: Natural Sciences

**AS.360.366. Public Policy Writing Workshop. 3 Credits.**

This workshop is designed to hone the analytical and communications skills necessary for effective formulation and advocacy of public policy. Topics include how to develop op-ed pieces and other forms of advocacy journalism, memoranda, position papers, and grant proposals. The workshop puts special stress on how to make a clear and persuasive exposition of complex or counter-intuitive policy arguments in the market place of ideas, including the challenges of writing for popular journals and communicating to specific audiences both in and out of government. Students receive intensive individual instruction, including close editing of their work and advice on how to publish or promote it in the public sphere. Enrollment restricted to Social Policy minors only.

Area: Social and Behavioral Sciences  
Writing Intensive

**AS.360.387. Cities, Crime, and the Constitution. 3 Credits.**

This course is meant to introduce students to the profound challenge of crime in American cities and to the opportunities and obstacles to address it. From gangs, gun violence, and the narcotics trade to crimes targeting vulnerable populations like children and the elderly, the course will survey the breadth and character of criminal enterprises in cities like Baltimore. Students will confront vexing questions raised by contemporary criminal justice practices relating to race, poverty, privacy, and policing. Students will also examine whether institutional reform in the areas of juvenile justice, conviction integrity, fairness in sentencing, and reentry reflect the Constitution's promise of equal justice for all.

Area: Social and Behavioral Sciences

**AS.360.401. Social Policy Seminar. 3 Credits.**

This course is designed for students who have completed either the Baltimore intensive semester of the Social Policy Minor. The students will make presentations and pursue joint projects based on what they have learned during the intensive semesters concerning key social policy issues.

Area: Social and Behavioral Sciences

**AS.360.528. Problems in Applied Economics. 2 Credits.**

This course focuses on a monetary approach to national income determination and the balance of payments. Money and banking, as well as commodity and financial markets, are dealt with under both central banking, as well as alternative monetary regimes. Particular emphasis is placed on currency board systems. Students learn how to properly conduct substantive economic research, utilizing primary data sources, statistical techniques and lessons from economic history. Findings are presented in the form of either memoranda or working papers of publishable quality. Exceptional work may be suitable for publication through the Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise. Advanced excel programming skills are required and students are expected to be pre-screened for research at the Library of Congress in Washington, D.C.. Bloomberg certification is a requisite.

**Prerequisite(s):** You must request Independent Academic Work using the Independent Academic Work form found in Student Self-Service: Registration &gt; Online Forms.  
Writing Intensive

**AS.360.551. Arts and Sciences Research Practicum.****AS.360.624. Responsible Conduct of Research (Online).**  
Online**AS.360.625. Responsible Conduct of Research.**

Through a discussion-based curriculum, the Responsible Conduct of Research course introduces students to key research issues: academic ethics, animal subjects, conflict of interest, data management and authorship, and human subjects. Attendance to all meetings is required to receive credit for the course.

**AS.360.671. Planets, Life and the Universe.**

This multidisciplinary course explores the origins of life, planet formation, Earth's evolution, extrasolar planets, habitable zones, life in extreme environments, the search for life in the Universe, space missions, and planetary protection. Recommended Course Background: Three upper level courses in sciences and buy textbooks

**Prerequisite(s):** Students may not register for this class if they have already received credit for AS.020.616 OR AS.020.334 OR AS.171.333 OR AS.171.699 OR AS.270.335 OR AS.360.339.

Area: Natural Sciences

**AS.360.781. Preparation for University Teaching.**

Full-time A&S Graduate Students only. This course will prepare graduate students to teach at the university level. Topics covered include large and small class teaching, characteristics of student learning, syllabus construction, grading students, and developing a teaching portfolio. Co-listed with EN.500.781

**AS.360.851. Arts and Sciences Research Practicum.****EN.990.974. Outgoing Engineering Exchange Program. 15 Credits.**

This is a study abroad place holder for students enrolled in engineering exchange programs.

**ME.800.601. Principles of Developmental Biology.**

Principles of Developmental Biology

**ME.800.610. Genes to Society II (inc. Brain, Mind, & Behavior, Nervous System and Special Senses).**

Required course in the first year medical student curriculum.

**ME.800.616. Longitudinal Ambulatory Clerkship - 1st year.**

Longitudinal Ambulatory Clerkship - 1st year

**ME.800.617. Longitudinal Ambulatory Clerkship - 2nd year.**

Required course in the second year medical student curriculum.

**ME.800.618. Transition to Residency and Internship and Preparation for Life.**

This two-week capstone course is offered twice in April of Year Four. The goal of TRIPLE is to prepare students to work effectively as interns, residents and practicing physicians. Additionally, it will help students to develop the knowledge, attitudes and skills necessary to be successful in their professional lives. In addition to Advanced Cardiac Life Support Certification, activities include exercises in Rapid Response scenarios; central venous catheter and interosseus line insertion; airway management; multitasking, organization and prioritization; advanced communications; reflective writing; teaching skills and facilitated small group discussions.

**ME.800.621. Clinical Foundations of Medicine.**

Clinical Foundations of Medicine

**ME.800.623. Scholarly Concentrations.**

Required course in the first year medical student curriculum.

**ME.800.630. Genes to Society III (inc. Cardiovascular, Pulmonary, and Renal).**

Required course in the first year medical student curriculum.

**ME.800.631. Genes to Society IV (inc. GI, Reproductive, Endocrine, and Musculoskeletal).**

Required course in the second year medical student curriculum.

**ME.800.633. Scholarly Concentrations - 2nd year.**

Required course in the second year medical student curriculum.

**ME.800.634. Transition to the Wards.**

Required course in the second year medical student curriculum.

**ME.800.637. Foundations of Public Health: Epidemiology, Ethics & the Health Care System.**

Required course in the first year medical student curriculum.

**ME.800.638. Scientific Foundations of Medicine (inc. Macromolecules, Cell Physiology, Metabolism, Genetics, Pharmacology, Foundations in Histology and Pathobiology, and Neoplasia).**

The purpose of this course is to present the language and principles of biomedical science that students will be using throughout their study of human health and disease. Course methods include lecture, readings, journal clubs, virtual microscopy, small-group problem-solving sessions and clinical correlations.

**ME.800.639. Genes to Society I (inc. Immunology, Microbiology/ Infectious Disease, Hematology, and Dermatology).**

Required course in the first year medical student curriculum.

**ME.800.640. Topics in Interdisciplinary Medicine – Health and HealthCare Disparities and Inequities.**

Required course in the first year medical student curriculum.

**ME.800.641. Topics in Interdisciplinary Medicine - Obesity, Nutrition, & Behavior Change.**

Required course in the first year medical student curriculum.

**ME.800.642. Topics in Interdisciplinary Medicine – Global Health.**

Required course in the first year medical student curriculum.

**ME.800.643. Topics in Interdisciplinary Medicine – Pain Care Medicine.**

Required course in the first year medical student curriculum.

**ME.800.644. Topics in Interdisciplinary Medicine – Disaster Medicine.**

Required course in the first year medical student curriculum.

**ME.800.645. Topics in Interdisciplinary Medicine - Substance Use Disorders.**

Required course in the second year medical student curriculum.



**ME.800.646. Topics in Interdisciplinary Medicine – Patient Safety and Quality Improvement.**

Required course in the second year medical student curriculum.

**ME.800.647. Topics in Interdisciplinary Medicine – End of Life/Palliative Care.**

Required course in the second year medical student curriculum.

**ME.800.648. Topics in Interdisciplinary Medicine – Metabolism.**

Topics in Interdisciplinary Medicine – Metabolism

**ME.800.649. Topics in Interdisciplinary Medicine – Immunology.**

Topics in Interdisciplinary Medicine – Immunology

**ME.800.650. Topics in Interdisciplinary Medicine – Infectious Disease.**

Topics in Interdisciplinary Medicine – Infectious Disease

**ME.800.651. Topics in Interdisciplinary Medicine – Cancer.**

Topics in Interdisciplinary Medicine – Cancer

**ME.800.652. Topics in Interdisciplinary Medicine - Introduction to Regenerative Medicine.**

Topics in Interdisciplinary Medicine - Introduction to Regenerative Medicine

**ME.800.653. Integrative Medicine.**

Required course in the first year medical student curriculum.

**ME.800.655. Topics in Interdisciplinary Medicine - High Value Healthcare.**

This three-day course is offered in February of Year One after the Microbiology and Infectious Disease section. The goals of the course are to empower students to understand high value care and advocate for its practice. Lectures serve as the background on why providers order unnecessary labs, imaging, and medications and the changes that are occurring. Interactive small group sessions then allow students to participate in hands-on approaches to improving their role as stewards of healthcare for the healthcare system and most importantly their patients.

**ME.800.661. Topics in Interdisciplinary Medicine - Genomic Medicine.**

Fulfills TIME requirement in the third and fourth year medical student curriculum.

**ME.800.699. Interdepartmental Elective.**

For Medical Students only. Specialized Topics in Interdepartmental. Refer to Medical Student Electives Book located at <https://www.hopkinsmedicine.org/som/students/academics/electives.html>.

**ME.800.702. Introduction to the Human Body: Anatomy, Histology, Physiology.**

The focus of the course is an overview exposure to the organ systems of the human body. Class has histology oral presentations.

**ME.800.703. CMM Core Discussion.**

In section One: Students present a journal article and lead the class discussion. In section Two: 3R online modules with class discussions. In section Three: Compliments Intro to Clinical Research course content.

**ME.800.705. Method, Logic and Experimental Design.**

Students meet in small groups with faculty members to read and discuss current research articles. The goal is to learn to critically evaluate experiments, results and to design controlled experiments.

**ME.800.708. BCMB Core Discussion.**

Core discussion is a small-group discussion which corresponds to the BCMB core module lectures.

**ME.800.709. Cellular and Molecular Basis of Disease.**

The emphasis of this course is the cellular and molecular aspects of the pathogenesis and treatment of human diseases.

**ME.800.713. BCMB Responsible Conduct of Research.**

This discussion course focuses on responsible conduct of research in science. Topics include Issues of Diversity, Mentoring, Misconduct/Fraud, Authorship, Conflict of Interest, Scientific Record Keeping, Animal and Human Experimentation.

**ME.800.717. CMM Grant Writing: Nuts and Bolts.**

Will give a general overview of the grant writing process to include the significant components of a hypothesis driven scientific grant application and its peer review process. Proposals for this course will be based on each student's current thesis work and will be developed as the thesis proposal.

**ME.800.718. Topics in Cellular and Molecular Medicine.**

This course introduces students to CMM faculty and their areas of expertise.

**ME.800.724. Introduction to Clinical Research.**

Understand the steps involved in conceiving, conducting and translating clinical research. Prepare and review a clinical research project in groups.

**ME.800.780. Scientific Foundations of Medicine (inc. Macromolecules, Cell Physiology, Metabolism, Genetics, Pharmacology, Foundations in Histology and Pathobiology, and Neoplasia).**

Required course in the first year medical student curriculum.

**ME.800.783. Scientific Foundations of Medicine: Histopathology.**

Course is offered in two sections. Students must enroll and attend both sections. The course is designed to provide the foundations to understand organ histology and histopathology. The course begins with basic concepts of tissue organization and ends with globally relevant histopathologic changes seen in disease. The course is primarily designed around the virtual microscopy (VM) system within small groups, occasional lectures, and e-lectures

**ME.800.786. Scientific Foundations of Medicine: Pharmacology.**

Scientific Foundations of Medicine: Pharmacology

**ME.800.789. 3B's: Bench to Bedside and Back.**

To further expose and educate students about the clinical opportunities and translational implications associated with their thesis research, and how this information may help guide the student to think about the translational potential of their research in the design of pre-clinical models, clinical trials or collaborations with the pharmaceutical industry. It will also demonstrate, that data obtained from patient tissues and clinical correlates can help bring the clinical research from the bedside back to the bench for continued improvement and refinement.

**ME.800.801. Research in Cellular and Molecular Medicine.**

First year students perform 3 lab rotations. Upper-class students in conjunction with thesis advisor perform focused research on his/her thesis project.

**ME.800.803. Biomedical Science Practicum.**

Provides an opportunity for students to actively conduct research in BME, HGEN, BCMB-2, Biophysics, or PHYS.

**ME.800.805. BCMB Quantitative Biology Lab.**

Weekly session provide hands-on work to reinforce and further develop computational concepts and problems students learn didactically in the BCMB core courses during the same period. Experimental design, and concepts of rigor and reproducibility will also be emphasized.

**ME.800.806. BCMB Computational Biology Bootcamp.**

This intensive one week course is meant to immerse student in computation, and to provide them with the foundational tools to be able to apply modern computational techniques and appropriate statistics to their data.