Course Bulletin

126371	Introduction to Microbiology: A Molecular Approach
Subject: MBS	Catalog Nbr: 0200
2017 FALL	Primary Claudette Gardel Claudette.Gardel@tufts.edu

Molecular biology is a broadly based discipline that unites the elements of microbiology (e.g., bacteriology, virology, mycology) with cell biology, biochemistry, biophysics, and genetics. This course describes the study of, and the search to understand, the regulation of gene expression in relation to the growth, metabolism, and development of bacteria, viruses, and other infectious agents. The overall course objectives are to 1) teach students to confront biological problems from within a certain framework, 2) encourage students to exercise their analytical and critical faculties to the utmost, and 3) arrive at solutions to the problems presented by applying their acquired knowledge

126396	Medical Histology
Subject: MBS	Catalog Nbr: 0202
2017 FALL	Primary Alvar Gustafson al.gustafson@tufts.edu

This course describes the study of form and function of cells, societies of cells (tissues), and organizations of tissues (organs) at the light and electron microscopic levels. As such it combines the principles of traditional cell biology and histology courses. Although lecture and laboratory sessions stress the relationships between structural composition and function, important clinical correlations are provided. The overall course objectives are to 1) develop the concept of the inseparable relationship of form and function, 2) provide adequate perspective and preparation in order to integrate the knowledge of cells, tissues, and organs into the scheme of other basic and clinical biomedical sciences, and 3) demonstrate that the study of cells and tissues is an important approach to the study of the human body in general a strategy that can assist in developing and strengthening powers of critical observation, problem solving, diagnostic reasoning, and judgment.

126423	Cell Biology
Subject: MBS	Catalog Nbr: 0201
2017 FALL	Primary John Castellot john.castellot@tufts.edu

This course describes the study of form and function of cells, societies of cells (tissues), and organizations of tissues (organs) at the light and electron microscopic levels. As such it combines the principles of traditional cell biology and histology courses. Although lecture and laboratory sessions stress the relationships between structural composition and function, important clinical correlations are provided. The overall course objectives are to 1) develop the concept of the inseparable relationship of form and function, 2) provide adequate perspective and preparation in order to integrate the knowledge of cells, tissues, and organs into the scheme of other basic and clinical biomedical sciences, and 3) demonstrate that the study of cells and tissues is an important approach to the study of the human body in general a strategy that can assist in developing and strengthening powers of critical observation, problem solving, diagnostic reasoning, and judgment.

Course Bulletin

126482	Biochemistry			
Subject:	Catalog Nbr:			
MBS	0203			
2017 FALL	Primary	James Baleja	jim.baleja@tufts.edu	

This course describes the study of the chemistry of cells and tissues and presents the biochemical basis for physiologic processes. While emphasis is placed on functional and regulatory aspects, a solid knowledge of the structure of major biochemical substances and of enzymatic reactions is required for understanding how biochemical reactions determine physiologic function and regulation. Although emphasis is placed on normal processes, disease states are presented to show how specific biochemical defects can lead to illnesses. The overall course objectives are to 1) understand how genetic regulation and metabolic reactions determine normal physiologic function, 2) begin to understand the biochemical basis of disease, and 3) use biochemical knowledge to interpret clinical problems.

126526	Immunology			
Subject:	Catalog Nbr:			
MBS	0204			
2017 FALL	Primary	Peter Brodeur	peter.brodeur@tufts.edu	

This course describes the study of the structure and function of the cells, tissues, organs, and molecules that are responsible for protecting the body against invading pathogens and infectious disease. Basic information is provided on host defense mechanisms, origins and functions of immune cells, innate immunity, the complement system, and specific immunity (humoral and cell mediated mechanisms). Topics also include antibody structure and function, antibody genetics and B cell development, T cell differentiation and activation, cellular cooperation and control of the immune response. Important clinical information is also presented including allergy, hypersensitivity and autoimmune disease, underlying mechanisms of transplantation immunology and tumor immunology, various forms of immunodeficiency including HIV, and methods of manipulating the immune system to treat immunologically mediated diseases. The overall course objectives are to 1) introduce students to important concepts in modern medical immunology, and 2) teach immunological mechanisms that have direct clinical application.

126554	Intro To Clinical Medicine			
Subject:	Catalog Nbr:			
MBS	0205			
2017 FALL	Primary	Richard Glickman-Simon	richard.glickman-simon@tufts.edu	

This course represents a survey of clinical medicine as practiced by physicians and other health care providers in Western countries. During the first half, students are introduced to basic human physiology; pathophysiology; and the fundamentals of clinical medicine including history taking, the physical examination, diagnostic testing, and modern therapeutics. During the second half, students apply information learned in the first half to the most prevalent diseases that plaque the developed world. Issues pertaining to population medicine and public health, health promotion and disease prevention, behavioral influences on health, and alternative medicine are also covered in the context of applicable disease states. The overall objectives of the course are to 1) identify the major the determinants of health genetic, environmental, behavioral and social and consider the extent to which physicians can influence their health effects; 2) describe the general

Course Bulletin

processes undertaken to arrive at a diagnosis, formulate a treatment plan, counsel a patient, and assess the benefits and harms of an intervention; 3) explore the relevant professional, ethical and interpersonal parameters that define the patient-physician relationship; 4) explain the scientific rationale behind medical decision-making and identify the major non-scientific factors that influence the day-to-day practice of medicine; 5) illustrate common diagnostic, treatment and preventive interventions for selected conditions and describe the principles governing their safe and effective clinical application; and 6) gain first-hand experience in the collection, organization, interpretation, analysis and communication of clinical information.

126566	**Physiology**

Subject:	Catalog Nbr:			
MBS	0206			
	2017 SPRG	Primary	Douglas Jefferson	douglas.jefferson@tufts.edu

This course describes the study of the functions and vital processes of the human body. It is divided into four sections: cellular and neuromuscular physiology; cardiovascular and respiratory physiology; renal and gastrointestinal physiology; and endocrine and reproductive physiology.
The overall course objectives are to 1) provide students with a thorough understanding of the basic physiologic principles of the human body, 2) integrate physiologic information with other biomedical disciplines, and 3) provide an important foundation for continuing clinical studies, especially in pathophysiology and pharmacology

126605	**Basic Human Pathology**

Subject:	Catalog Nbr:			
MBS	0207			
	2017 SPRG	Primary	Paul Kwan	paul.kwan@tufts.edu

This course describes the study of diseases in relation to the structural and functional changes in cells, tissues, and organs during the natural histories of specific disorders. The course begins with the principles of general pathology, which focus upon the basic changes in cells and tissues in response to broad pathological processes and pathogenetic mechanisms; it concludes with topics in systemic pathology, which address certain common, important specific disease processes as they affect particular organs or systems in the context of actual patient care.
The importance of practical techniques (e.g., morphologic, molecular, immunologic) that reveal pathologic changes in fluids, cells, tissues or organs of patients and result in specific diagnoses that lead to sound clinical care and intervention will also be presented. The overall course objectives are to 1) achieve a mastery of the basic vocabulary of medicine, which allows health care professionals to communicate effectively, 2) develop some special skills needed for pathology, including visual recognition and interpretation of pathologic lesions during examination (physical, gross or microscopic), and 3) develop a working framework for making good, rational, medically-related decisions, which involves gathering appropriate data, organizing pertinent data, interpretation, and generating probable conclusions.

126646	**Intro to Basic and Clinical Human Anatomy**

Subject:	Catalog Nbr:
MBS	0208

Course Bulletin

	2017 SUMR	Primary	Robert Willson	rob.willson@tufts.edu

This course describes the study of the structure of the human body as seen through dissection and medical imaging, including radiography and magnetic resonance. Topics covered include the anatomy of the Extremities, Thorax, Abdomen, and Pelvis. Laboratory exercises will include computer-based dissections using 3-D reconstructions based on the Visible Human Project as well as 2-D cross sections and radiographic images. The overall course objectives are to 1) provide students with an introduction to anatomical and medical terminology and basic information on grossly dissectible structures in the human body, and 2) apply this knowledge to clinical and diagnostic problem-solving.

126692	**Nutrition**

Subject:	Catalog Nbr:			
MBS	0209			
	2017 FALL	Primary	Grace Phelan	No Email on file.

This course describes the study of the role of specific nutrients in normal metabolism as well as the relationship of nutrition throughout states of life. Topics include the important role of nutrition in the development and treatment of major chronic diseases including heart disease, cancer and obesity; and the relationship of exercise to the maintenance of good health, chronic disease prevention, and the aging process. The overall course objective is to emphasize the value of nutrition and exercise in both health maintenance and disease.

126823	**Thesis**

Subject:	Catalog Nbr:
MBS	0210

126870	**Genetics**

Subject:	Catalog Nbr:			
MBS	0212			
	2017 FALL	Primary	Janet Cowan	Janet.Cowan@tufts.edu

Medical genetics involves the application of genetic principles in the practice of medicine. Medical genetics encompasses diagnosis and treatment of genetic diseases, study of inheritance of diseases in families, mapping of disease genes to their chromosome locations, study of the molecular genetics and pathogenesis of inherited disorders, provision of genetic counseling for families, and recently, investigations of methods for gene therapy. Medical geneticists care for fetuses in utero, newborns, children, and adults with inherited conditions, adults with infertility or recurrent miscarriages, and adults who are genetically predisposed to cancer. Unlike any other field, genetics represents a true integration between the basic and the clinical sciences. The overall course objectives are 1) Given a clinical problem, take an appropriate family history; 2)Given a pedigree, determine the most likely mode of inheritance; 3) Given a disorder, whether Mendelian, chromosomal, or multifactorial in origin, determine the likely risk for other family members; 4) Recognize who might benefit from genetic counseling and provide it if the problem is straightforward, or know to whom to refer patients if the problem is complex; 5) Appreciate how a disease gene is localized, learn the potential benefits of understanding the molecular approach to disease, and appreciate the therapy that can derive from

Course Bulletin

	this understanding; 6) Take into account the diversity in genetic makeup as an important factor in preventive health care, diagnosis and treatment; 7) Reduce unnecessary exposure to known and potential physical and chemical mutagenic, teratogenic, and carcinogenic agents; 8) Recognize how environment can affect phenotype; 9) Identify ethical dilemmas in providing genetic services.

126921	**Pharmacology**			
	Subject: MBS	Catalog Nbr: 0213		
	2017 FALL	Primary	David Greenblatt	dj.greenblatt@tufts.edu
	This course will describe the nature and steps in the drug discovery and development processes; differentiate the interplay between basic and clinical pharmacology and the elements of pathobiology and pathophysiology that lead to drug choices in clinical practice; analyze the principles of selective toxicity and the pharmacokinetic and other mechanisms which underlie the rational use of drugs; identify the properties of drug action at specific receptors and the mechanisms of action of select drugs; determine toxic and therapeutic endpoints and drug side effects and list major indications and contraindications for relevant drugs.			

126961	**Computerized Motion/Gait Analysis**			
	Subject: MBS	Catalog Nbr: 0222		
	2017 SPRG	Primary	Mark Pitkin	No Email on file.
	The course will cover the planning of clinical trials; procedure of data acquisition, and interpretation of results. It will consist of didactic lectures and computer-based sessions at the Tufts/NESH Center for Human Performance. The course includes materials on NIH funded research projects, and students will learn how to conduct biomechanical trials themselves using the Lab's equipment. Interested students will be able to participate in research projects with their results submitted for publication.			

127048	**From A Cell To Cancer**			
	Subject: MBS	Catalog Nbr: 0224		
	2017 SPRG	Primary	Carlos Sonnenschein	carlos.sonnenschein@tufts.edu
	A course about an evolutionary perspective of development and cancer.			

138644	**Transfer Credit**
	Subject: TRAN Catalog Nbr: 9999

138676	**Internal Medicine I**

Course Bulletin

Subject:	Catalog Nbr:			
PA	0203			
	2017 SPRG	Primary	Jeanine Carlson	jeanine.carlson@tufts.edu

This course will emphasize the pathophysiology of human disease. Focusing upon cardiovascular, pulmonary, hematology, and immunology systems, the natural history of diseases of these systems will be covered. The diagnostic, therapeutic, and preventative measures employed in the management of these disease states will be addressed.

138677	**Internal Medicine II**			
Subject:	Catalog Nbr:			
PA	0204			
	2017 SUMR	Primary	Jeanine Carlson	jeanine.carlson@tufts.edu

This course will focus upon diseases of the renal, endocrine, and rheumatologic systems. Infectious disease and oncology will also be discussed. Disease diagnosis, treatment and prevention will be addressed.

138678	**Behavioral Medicine**			
Subject:	Catalog Nbr:			
PA	0210			
	2017 SPRG	Primary	M. Annette Hanson	M__Annette.Hanson@tufts.edu

This course offers students an introduction to psychiatric disease, its classification of disease states, an in depth look at common psychiatric illnesses seen in general medical practice and emergency practice settings. Topics such as psychotherapy, psychoanalysis, pharmacological intervention, substance abuse and addiction, domestic and child abuse will be discussed also.

138679	**Women's Health**			
Subject:	Catalog Nbr:			
PA	0212			
	2017 SUMR	Primary	Henry Klapholz	Henry.Klapholz@tufts.edu

The spectrum of female reproduction, conception, fetal growth and development, prenatal and antenatal care, and reproductive endocrinology will be covered. Students will be given an introduction to the anatomy of the female genitourinary tract as well as gynecologic oncology, its natural course, diagnosis, and treatment. Cardiovascular disease in women will be addressed as will gynecologic infections and sexual assault diagnosis and management. Emphasis will be placed upon history taking, gynecologic examination, counseling, testing, and disease prevention.

138681	**Physical Diagnosis II**			
Subject:	Catalog Nbr:			
PA	0216			
	2017 SUMR	Primary	Mark Freedman	Mark.Freedman@tufts.edu

Students will continue to learn interview and examination techniques and build upon Physical Diagnosis I.

Course Bulletin

Instructors will assist students in honing their interviewing and examination skills through focused examinations and varying interviewing techniques. Compilation of patient data in written form and oral presentation of patients' medical history and examination results will be emphasized. Some instruction may take place in external clinical sites.

138682	Surgery

Subject: PA | Catalog Nbr: 0217

2017 SUMR | Primary | Jeffrey Cooper | No Email on file.

The course focuses on the basic surgical concepts needed for the PA to function in primary care settings as well as major surgical areas. The course emphasizes surgical concepts, topics and surgical technique as well as attention to examination of the acute abdomen, surgical diagnosis and treatment of common surgical conditions including obstructive, ineffective, and neoplastic diseases of the gastrointestinal tract, cardiothoracic diseases, trauma, and the vascular system. Risk assessment, wound healing, pre and postoperative care will also be addressed.

138683	Nutrition

Subject: PA | Catalog Nbr: 0218

2017 SPRG | Primary | Kelly Kane | Kelly.Kane@tufts.edu

Students will be taught the basics of human nutritional needs as well as alterations of these demands during various clinical scenarios and disease states.

138684	Research Methods

Subject: PA | Catalog Nbr: 0219

This is an overview of research and reviews important statistical principles and methods and their application to problems in medicine including hypothesis development, variables, statistical significance, data collection, study methodologies, scientific findings and conclusions.

138685	Evidence-based Medicine

Subject: PA | Catalog Nbr: 0220

2017 FALL | Primary | Allen Shaughnessy | Allen.Shaughnessy@tufts.edu

Using lectures and small group discussions this course provides a practical approach to making sound medical decisions on the basis of current evidence in the medical literature. Through a series of didactic presentations, group exercises, and reading, students will learn the basic principles of evidence-based medicine. Basic skills in using MEDLINE and other medical databases will be emphasized and practiced. Research principles, research ethics, and basic statistical review will be discussed.

Course Bulletin

138686	Orthopedics			
Subject:	Catalog Nbr:			
PA	0223			
2016 FALL	Primary	Joyce Dandreo	Joyce.Dandreo@tufts.edu	
2017 FALL	Primary	Kathleen Goreham	Kathleen.Goreham@tufts.edu	

This course explores all aspects of diseases and conditions of bones and joints. Emphasis will be placed on the orthopedic examination in conditions such as fracture, dislocation, ligament, tendon, and muscular conditions. Joint aspiration, immobilization, splinting, and casting will be addressed in supplementary workshops.

138687	Critical Care Medicine			
Subject:	Catalog Nbr:			
PA	0227			
2017 FALL	Primary	Richard Murphy	Richard.Murphy@tufts.edu	

Students will be introduced to hemodynamic derangements in multiorgan system failure patients, including shock, trauma, cardiac arrest, acid-base and electrolyte management, and nutritional support. Other topics covered include ventilator management, invasive procedures, and diagnostic methods used in ICU care.

138688	Procedural Workshops			
Subject:	Catalog Nbr:			
PA	0240			
2017 FALL	Primary	Richard Murphy	Richard.Murphy@tufts.edu	
2017 FALL	Primary	Joseph Sansone	Joseph.Sansone@tufts.edu	

This course for physician assistants focuses upon common bedside procedure performed in clinical situations. Procedures taught range from vital sign taking and phlebotomy to invasive procedures such as thoracentesis and central line placement. Using peer practicums (phlebotomy and venipuncture) and simulation models for more invasive procedures, key concepts and techniques will be taught.

138689	Primary Care II			
Subject:	Catalog Nbr:			
PA	0236			
2017 SUMR	Primary	Beth Buyea	Beth.Buyea@tufts.edu	

This course is a continuation of Primary Care I and offers first year physician assistant students in-depth training in a wide variety of clinically related subjects, including continuing ECG interpretation, Laboratory Medicine, and Public Health Issues. Topics frequently addressed in other courses will be re-introduced in more depth and scope by experienced clinicians and experts.

138690	Primary Care III
Subject:	Catalog Nbr:
PA	0237

Course Bulletin

	2017 FALL	Primary	Robin Reed	Robin.Reed@tufts.edu
Using a learner-centered approach, this course will incorporate student-led, symptom-based cases to illustrate clinical presentation, diagnostic skills, and management issues with common disease states. Focusing on a varied population, this course will cover a wide range of scenarios encountered within primary care through case creation through evidence-based research, oral presentations and audience participation.				

138705	**Clinical & Funct. Anatomy I**			
Subject: PA	Catalog Nbr: 0201			
	2017 SPRG	Primary	Rebecca Lufler	Rebecca.Lufler@tufts.edu
This course teaches the structure and physiologic function of the human body. Utilizing lectures, simulation, and cadavers, students will have a clinically-focused introduction to the organ systems of the head, neck, chest, abdomen, and pelvis. The cellular, cardiovascular, pulmonary, endocrine, gastrointestinal, and neurophysiological components will be presented in sequence to complement other courses given in this and following semesters.				

138706	**Clinical & Funct. Anatomy II**			
Subject: PA	Catalog Nbr: 0202			
	2017 SUMR	Primary	Rebecca Lufler	Rebecca.Lufler@tufts.edu
Continuing Part 1, this course will focus upon the musculoskeletal structure and physiological function of the human body utilizing lectures, simulation, and cadavers. Clinical correlation through case studies will be emphasized.				

138707	**Internal Medicine III**			
Subject: PA	Catalog Nbr: 0205			
	2017 FALL	Primary	Jeanine Carlson	jeanine.carlson@tufts.edu
Focusing upon the management of disorders of the gastrointestinal tract, this course will also use clinical cases to highlight the natural history of common disease states, their diagnosis, treatment and prevention.				

138708	**Pharmacology I**			
Subject: PA	Catalog Nbr: 0206			
	2017 SPRG	Primary	Paul Abourjaily	Paul.Abourjaily@tufts.edu
Focusing upon the principles of pharmacologic action, classification, and drug uses, this will be an introduction into clinical use of medications for various disease states. Emphasis will be placed upon indications, contraindications, bioavailability, drug interactions, dose response, side effects and adverse reactions.				

Course Bulletin

138709	Pharmacology II			
Subject:	Catalog Nbr:			
PA	0207			
2017 SUMR	Primary	Paul Abourjaily	Paul.Abourjaily@tufts.edu	
Continuation of Pharmacology I. Focusing upon the principles of pharmacologic action, classification, and drug uses, this will be an introduction into clinical use of medications for various disease states. Emphasis will be placed upon indications, contraindications, bioavailability, drug interactions, dose response, side effects and adverse reactions.				

138710	Professional Practice			
Subject:	Catalog Nbr:			
PA	0213			
2017 SPRG	Primary	Richard Murphy	Richard.Murphy@tufts.edu	
The history of the Physician Assistant profession will be discussed. Topics such as the role of the PA in the US health care system, scope of practice, professional and legal restrictions, national board certification, and state licensure will be addressed. Interdisciplinary dynamics, PA-supervisor relationships, practice management and ownership, billing, federal and private insurers, billing, public policy trends, medical ethics, hospital credentialing, continuing medical education, and medical malpractice will be covered.				

138711	Physical Diagnosis I			
Subject:	Catalog Nbr:			
PA	0215			
2017 SPRG	Primary	Mark Freedman	Mark.Freedman@tufts.edu	
Using traditional lectures, simulated and standardized patients, and small student group interactions, students will be introduced to the basics of history taking and complete physical examination. Development of interviewing techniques and examination skills will be emphasized.				

138712	Neuroscience I and II			
Subject:	Catalog Nbr:			
PA	0221			
2017 FALL	Primary	Megan Lee	Megan.Lee@tufts.edu	
2017 FALL	Primary	Jennifer Patoulidis	Jennifer.Patoulidis@tufts.edu	
This course will present neuroanatomy and neurophysiology as they relate to clinical assessment and management of various disease states. History taking, physical examination and diagnostic imaging techniques will be discussed as they apply to neurological disease and trauma.				

138713	Pediatrics			
Subject:	Catalog Nbr:			
PA	0222			
2017 FALL	Primary	MaryAnn Volpe	maryann.volpe@tufts.edu	

Course Bulletin

Normal child growth and development will be emphasized as well as diagnosis and management of common childhood diseases and infections. Also discussed will be immunizations and medications used in pediatric practice, their indications, contraindications, and dosage in relation to specific disorders. Pediatric respiratory emergencies, injuries, cancer and hematologic disorders, and child abuse will be covered.

138714	**Diagnostic Imaging**			
Subject:	Catalog Nbr:			
PA	0229			
2017 SUMR	Primary	Robert French	No Email on file.	
2017 SUMR	Primary	Joseph Sansone	Joseph.Sansone@tufts.edu	
2017 SUMR	Primary	Jalil Afnan	No Email on file.	

Radiologic safety, imaging modalities, indications, contraindications, benefits and risks of use of X-ray diagnosis will be covered. Assessment of common X-rays used in primary care and emergency medicine will be addressed. Students will be taught to recognize common radiologic abnormalities. Other diagnostic tools such as ultrasonography, MRI, CT scanning, and nuclear medicine scans will be introduced.

138715	**Emergency Medicine**			
Subject:	Catalog Nbr:			
PA	0225			
2017 FALL	Primary	Joseph Sansone	Joseph.Sansone@tufts.edu	

This course provides fundamental instruction in the diagnosis and management of both common and life-threatening patient presentations to the emergency department.

138716	**Geriatrics**			
Subject:	Catalog Nbr:			
PA	0230			
2017 FALL	Primary	Richard Dupee	richard.dupee@tufts.edu	

Students will be introduced to the process of aging as it affects the human body and mind. Atypical presentations of common acute and chronic diseases as they are seen in older populations will be addressed as will the challenges of managing various and concomitant disease states. Pharmacologic therapy in older patients, Alzheimer's disease, dementia, patient compliance issues, and end-of-life care will be discussed as well.

138717	**Physical and Occupational Medicine**			
Subject:	Catalog Nbr:			
PA	0231			
2017 FALL	Primary	Mark Freedman	Mark.Freedman@tufts.edu	
2017 FALL	Primary	David Blaustein	David.Blaustein@tufts.edu	

Acute and chronic recovery from disease and injury will be covered as it applies to physician assistant practice. Implications of and indications for rehabilitative services, levels of care required, specific interventions and

Course Bulletin

therapies will be discussed.

138718	Primary Care I			
Subject:	Catalog Nbr:			
PA	0235			
2017 SPRG	Primary	Beth Buyea		Beth.Buyea@tufts.edu
This course offers first year physician assistant students in-depth training in a wide variety of clinically related subjects, including Medical Genetics, Dermatology, Otolaryngology, and Ophthalmology. Topics frequently addressed in other courses will be re-introduced in more depth and scope by experienced clinicians and experts.				

138719	Capstone Project			
Subject:	Catalog Nbr:			
PA	0250			
2017 FALL	Primary	Beth Buyea		Beth.Buyea@tufts.edu

138720	Senior Seminars			
Subject:	Catalog Nbr:			
PA	0238			
2017 FALL	Primary	Richard Murphy		Richard.Murphy@tufts.edu
This course offers second year PA students information on a wide variety of clinical and practice-related subjects. These seminars are offered on “call-back” days during their clinical training in an effort to prepare them for future clinical practice. A special in Pain Management is being introduced and will include an innovative curriculum on dealing with acute and chronic pain in clinical practice. Students will also receive instruction in preparing for entering the “business” of medicine and preparing for initial NCCPA certification and ongoing recertification.				

138759	Bioethics for the Physician-Scientist			
Subject:	Catalog Nbr:			
MBS	0225			
2017 SPRG	Primary	John Castellot		john.castellot@tufts.edu
This course will review the principles of bioethics and discuss approaches to ethical decision making.				

138760	Bioethics for the Budding Clinician			
Subject:	Catalog Nbr:			
MBS	0226			
2017 SPRG	Primary	John Castellot		john.castellot@tufts.edu
This course will review the principles of bioethics and discuss approaches to ethical decision making.				

Course Bulletin

139075	SCPE in Emergency Medicine
Subject: PA	Catalog Nbr: 0301

Familiarizes students with problems encountered in an emergency room. Students are responsible for taking medical histories and performing physical examinations on acute as well as non-emergent patients and presenting these to the medical preceptor. When appropriate, students perform necessary diagnostic and therapeutic measures. Through clinical training and didactic sessions at the clinical site, students may also be exposed to the emergency management and treatment of such conditions as trauma, shock, burns, asthma, poisoning, allergic reactions, seizures, and respiratory failure.

139076	SCPE in Ambulatory Medicine
Subject: PA	Catalog Nbr: 0302

Exposes students to a broad range of experiences that emphasize the patient as an individual and family member. Students are involved in the initial and ongoing assessment of patients in all age groups as well as management of individuals with established diagnoses. In addition to routine health maintenance, students become familiar with common primary care and family medicine problems such as upper respiratory illness, orthopedic injuries, musculoskeletal complaints, hypertension, diabetes, and heart disease. Patient education, counseling, and integration with community services are other components of this rotation. Students may see patients in venues that include hospital ambulatory care clinics, private offices, family medicine practices, clinics and urgent care settings. This experience exposes students to broad aspects of ambulatory medical practice, emphasizing the patient as an individual and family member. Students will have exposure to caring for patients across a broad spectrum of ages. Students typically encounter such common medical problems as community acquired infections, musculoskeletal complaints, hypertension, diabetes, minor trauma, and heart disease. In addition to medical diagnosis and management, patient education, counseling, and integration of community services and arrangement of follow up care are major parts of this rotation. This part of the outpatient experience may be provided in a walk-in clinic or urgent care venue.

139077	SCPE in In-Patient Medicine
Subject: PA	Catalog Nbr: 0303

During this inpatient hospital rotation, students take and record medical histories and perform physical examinations. It offers students an opportunity to become familiar with the assessment and management of varied medical problems by attending medical rounds and conferences, performing diagnostic procedures, presenting case write-ups, recording progress notes, and working under the supervision of a physician. It emphasizes the skills of collecting, assessing, and presenting patient data for physician review; ordering appropriate laboratory and diagnostic studies; counseling patients about therapeutic procedures; and helping to coordinate the contributions of other health professionals involved in management of the patient.

Course Bulletin

139078	SCPE in Surgery
Subject: PA	Catalog Nbr: 0304
Students in this rotation participate in varied surgical patient care responsibilities, under the supervision of a surgical resident or staff surgeon. Emphasizes general surgery, though students may have some exposure to other surgical specialties and subspecialties. Students assist in surgical patients' initial assessment, which includes obtaining accurate medical histories and performing physical examinations. As members of the surgical team, students participate in preoperative management, including patient education and procedures necessary to prepare patients for surgery. Students assist surgeons in the operating room and have an opportunity to become familiar with operating room procedures and equipment. Students are also involved in patients' postoperative evaluation and management. When possible, students attend surgical grand rounds and other surgically-oriented educational meetings.	

139079	SCPE in Behavioral Medicine
Subject: PA	Catalog Nbr: 0305
Exposes students to varied mental health problems, in such settings as wards, clinics, and multiservice centers. Students are expected to perform mental status examinations and cognitive testing. Emphasizes recognizing various types of mental health problems that require referral to a specialist and managing problems that can be handled by the non-specialist. Assists students in furthering their understanding of effective patient interactions and the mental health components of health, disease, and disability.	

139080	SCPE in Pediatrics
Subject: PA	Catalog Nbr: 0306
Develops students' familiarity with outpatient pediatric problems, in training clinics and private pediatric offices. Emphasizes caring for a child from birth through adolescence. Provides opportunities to take medical histories and perform pediatric physical examinations. Stresses diagnosing and managing common childhood illnesses and evaluating growth and development. Assists students in developing skills to counsel parents about immunizations, child visits, growth and development parameters, common psychosocial problems, nutrition, and accident and poisoning prevention. Students may also have the chance to learn how to administer immunizations and perform audio and visual screening.	

139081	SCPE in Women's Health
Subject: PA	Catalog Nbr: 0307
Enables students to become involved with obstetrical and gynecological services provided by teaching hospitals. Emphasizes pre- and postnatal care, monitoring labor, assisting in deliveries, and developing the necessary skills to deliver a child in an emergency situation. Provides opportunities to take obstetrical histories and perform obstetrical examinations. During this rotation, students are expected to learn how to assess and manage a variety of common gynecological problems and to counsel patients on family planning.	

Course Bulletin

139082	SCPE in Orthopedics
Subject: PA	Catalog Nbr: 0308
Offers students an opportunity to care for older and infirm patients in a variety of settings including nursing homes, rehabilitation centers, and convalescent facilities, and exposes the student to issues of caring for patients with sub-acute but in many cases, multiple problems complicated by advanced age, post-acute event recovery issues, and complex social and economic problems commonly seen in this population.	

139403	Medical Physiology			
Subject: PA	Catalog Nbr: 0208			
2017 SPRG	Primary	David Damassa	david.damassa@tufts.edu	
2017 SPRG	Primary	Bruce Berlanstein	Bruce.Berlanstein@tufts.edu	
This course will review basic principles of normal physiology including central nervous, cardiovascular, pulmonary, gastrointestinal, endocrines, renal, and reproductive systems of the human body. Tracking anatomy, pharmacologic, and internal medicine topics in other courses, these lectures are meant to serve as a foundation of information.				

139475	Critical Evaluation of the Clinical Literature			
Subject: MBS	Catalog Nbr: 0228			
2017 SPRG	Primary	William Strohsnitter	William.Strohsnitter@tufts.edu	
Sophisticated yet expensive treatments for uncommon but serious diseases are themselves becoming more common options for patients and their health care providers. These choices, however pose daunting challenges to numerous parties including effected patients, health care providers, health care policy makers, and health plan administrators. These stakeholders need to weigh the safety, efficacy, and cost effectiveness of these novel therapeutics against those already in use. Furthermore, preventive measures against serious diseases need to be established in order to reduce their burden on health care systems. These measures can only be implemented if risk factors for these diseases can be determined. Whether the objective is to identify effective and safe disease treatment regimens or risk factors to prevent disease occurrence, critical review of published evidence is essential in making judgments regarding how well these measures will work. Knowledge of basic epidemiologic and biostatistical tenets is necessary to effect this assimilation of evidence. Students in thiscourse will become familiar with evaluating the strengths and limitations of published studies by reviewing and discussing selected publications. In addition, they will conduct an independent review of a selected paper that will be evaluated as part of their course grade. They will also become familiar with epidemiologic and biostatistical principles that will form the basis of these analyses.				

Course Bulletin

139719	Neuroscience II			
Subject:	Catalog Nbr:			
PA	0224			
2017 FALL	Primary	Megan Lee		Megan.Lee@tufts.edu
2017 FALL	Primary	Jennifer Patoulidis		Jennifer.Patoulidis@tufts.edu

This course will present neuroanatomy and neurophysiology as they relate to clinical assessment and management of various disease states. History taking, physical examination and diagnostic imaging techniques will be discussed as they apply to neurological disease and trauma.

This course is a continuation of PA 0221 - Neurology I

139725	Clinical Elective in Pediatric Cardiology
Subject:	Catalog Nbr:
PA	0401

139726	Clinical Elective in Neonatology
Subject:	Catalog Nbr:
PA	0402

139727	Clinical Elective in Pediatrics
Subject:	Catalog Nbr:
PA	0403

139728	Clinical Elective in Pediatric Critical Care Medicine
Subject:	Catalog Nbr:
PA	0404

139729	Clinical Elective in Emergency Medicine
Subject:	Catalog Nbr:
PA	0405

139730	Clinical Elective in Obstetrics & Gynecology
Subject:	Catalog Nbr:

Course Bulletin

PA	0406

139731	Clinical Elective in Gynecological Oncology
Subject:	Catalog Nbr:
PA	0407

139732	Clinical Elective in Hematology & Oncology
Subject:	Catalog Nbr:
PA	0408

139733	Clinical Elective in Adult Cardiology
Subject:	Catalog Nbr:
PA	0409

139734	Clinical Elective in Cardiac Surgery
Subject:	Catalog Nbr:
PA	0410

139735	Clinical Elective in Thoracic Surgery
Subject:	Catalog Nbr:
PA	0411

139736	Clinical Elective in Critical Care Medicine
Subject:	Catalog Nbr:
PA	0412

139737	Clinical Elective in Rehabilitation Medicine
Subject:	Catalog Nbr:
PA	0413

Course Bulletin

139738	**Clinical Elective in Surgical Oncology**
Subject:	Catalog Nbr:
PA	0414

139739	**Clinical Elective in Plastic Surgery**
Subject:	Catalog Nbr:
PA	0415

139740	**Clinical Elective in Bariatric Surgery**
Subject:	Catalog Nbr:
PA	0416

139741	**Clinical Elective in Behavioral Medicine**
Subject:	Catalog Nbr:
PA	0417

139742	**Clinical Elective in Child Psychiatry**
Subject:	Catalog Nbr:
PA	0418

139743	**Clinical Elective in Family Medicine**
Subject:	Catalog Nbr:
PA	0419

139744	**Clinical Elective in Orthopedics**
Subject:	Catalog Nbr:
PA	0420

Course Bulletin

139745	Clinical Elective in Geriatrics
Subject:	Catalog Nbr:
PA	0421

139746	Clinical Elective in Palliative Care
Subject:	Catalog Nbr:
PA	0422

139747	Clinical Elective in Experimental Surgery
Subject:	Catalog Nbr:
PA	0423

139748	Clinical Elective in Rural Medicine
Subject:	Catalog Nbr:
PA	0424

139749	Clinical Elective in Trauma Surgery
Subject:	Catalog Nbr:
PA	0425

139750	Clinical Elective in Primary Care
Subject:	Catalog Nbr:
PA	0426

139751	Clinical Elective in Radiology
Subject:	Catalog Nbr:
PA	0427

Course Bulletin

139752	Clinical Elective in Interventional Radiology
Subject:	Catalog Nbr:
PA	0428

139753	Clinical Elective in Gastroenterology
Subject:	Catalog Nbr:
PA	0429

139754	Clinical Elective in Infectious Disease
Subject:	Catalog Nbr:
PA	0430

139755	Clinical Elective in Dermatology
Subject:	Catalog Nbr:
PA	0431

139756	Clinical Elective in Allergy
Subject:	Catalog Nbr:
PA	0432

139757	Clinical Elective in Neurology
Subject:	Catalog Nbr:
PA	0433

139758	Clinical Elective in Neurosurgery
Subject:	Catalog Nbr:
PA	0434

Course Bulletin

139759	Clinical Elective in Rheumatology
Subject:	Catalog Nbr:
PA	0435

139760	Clinical Elective in Nephrology
Subject:	Catalog Nbr:
PA	0436

139761	Clinical Elective in Urology
Subject:	Catalog Nbr:
PA	0437

139762	Clinical Elective in Nutrition
Subject:	Catalog Nbr:
PA	0438

139763	Clinical Elective in Vascular Surgery
Subject:	Catalog Nbr:
PA	0439

139764	Clinical Elective in Transplantation
Subject:	Catalog Nbr:
PA	0440

139910	Clinical Elective in Pulmonology
Subject:	Catalog Nbr:
PA	0441

139932	Pharmaceutical Products: Survey of Development Principles and Concepts

Course Bulletin

Subject:	Catalog Nbr:
DRMD	0201

An introduction to the principles and activities that underlie the development of new medical products, including drugs, biologics, vaccines, medical devices and in-vitro diagnostics.

139933	Clinical Trials Overview
Subject:	Catalog Nbr:
DRMD	0202

An introduction to the concepts, strategies, and activities of clinical studies, from Phase 1 through Phase 4.

139934	Quantitative Methods Applies to Early Development Processes
Subject:	Catalog Nbr:
DRMD	0203

The fundamentals of epidemiology and biostatistics that are needed to develop and analyze clinical data obtained from early development activities, including characterization of the target population, adaptive design, and description of results from early testing.

139935	Quantitative Methods Applied to Late Development Processes
Subject:	Catalog Nbr:
DRMD	0204

The fundamentals of epidemiology and biostatistics that are needed to conduct randomized controlled trials, including interim analyses, and to conduct post-marketing studies, including cohort studies and registries.

Special topics: Baysean statistics for medical devices and testing in-vitro test kits.

139936	Translational Medicine: From Drug Discovery to Clinical Development
Subject:	Catalog Nbr:
DRMD	0205

The principles and activities that build an understanding of the pharmacokinetics and pharmacodynamics of new molecular entities, and the special issues posed by biologicals.

139937	Regulatory Affairs and Compliance
Subject:	Catalog Nbr:
DRMD	0207

The principles and practices of regulatory strategy and logistics in representing a company to regulatory agencies; the processes needed to be internally compliant with SOPs and externally consistent with Good Regulatory Practices.

Course Bulletin

140061	Clinical Elective in Outpatient Psychiatry
Subject: PA	Catalog Nbr: 0442

140095	Mental Illness and its Pharmacologic Management
Subject: MBS	Catalog Nbr: 0229
2017 SPRG	Primary David Greenblatt dj.greenblatt@tufts.edu

Emotional disorders and mental illness are commonly encountered in medical practice by primary care physicians, internists, and most of the medical subspecialties. These disorders can present as the principal reason for seeking health care, or as components or consequences of other underlying medical disorders. The majority of such individuals are not referred for specialty treatment by psychiatrists, but rather are managed by their primary physicians. The principal objective of this course is to introduce MBS candidates -- the majority of whom will go on to become physicians involved in primary health care delivery -- to the fundamental features of emotional disorders and mental illnesses encountered in clinical medicine, and pharmacologic approaches to management of these disorders. The instructional strategy will involve integrated teaching by Tufts-affiliated physicians having extensive experience in clinical psychopharmacology, together with basic/clinical pharmacology instruction by the course director and other faculty with a focus on mechanisms of psychotropic drug action, principles of appropriate clinical use, and recognition of hazards and adverse reactions.

The course will meet once each week for 12 weeks in the Spring semester for 90 minutes per session, for a total of 20 contact hours. The core topics will be:

- The epidemiology of mental illness, and the relation to primary care medicine.
- Anxiety and panic disorders
- Anxiolytic and anti-panic drugs
- Sleep disorders
- Sedative-hypnotic medications
- The clinical spectrum of depression and mood disorders
- Antidepressant agents
- Bipolar disorder and its treatment
- Schizophrenia and other thought disorders
- Medications used to treat schizophrenia
- Substance abuse and its pharmacologic treatment
- Complementary and alternative medicines
- Genetics of mental illness and its pharmacologic treatment
- Drug interactions in psychopharmacology
- Topical review

140138	Clinical Elective in Pediatric Neurology
Subject:	Catalog Nbr:

Course Bulletin

PA	0443

140321	**Clinical Elective in Otolaryngology**
Subject:	Catalog Nbr:
PA	0444

140322	**Clinical Elective in Cardiothoracic Surgery**
Subject:	Catalog Nbr:
PA	0445

140323	**Clinical Elective in Pediatric Gastroenterology**
Subject:	Catalog Nbr:
PA	0446

140449	**Clinical Elective in Neurological Intensive Care Medicine**
Subject:	Catalog Nbr:
PA	0447

140450	**Clinical Elective in Ambulatory Medicine**
Subject:	Catalog Nbr:
PA	0448

140451	**Clinical Elective in Interventional Medicine**
Subject:	Catalog Nbr:
PA	0449

140452	**Clinical Elective in Surgical Intensive Care Medicine**
Subject:	Catalog Nbr:
PA	0450

Course Bulletin

140453	Clinical Elective in Neonatal Intensive Care Medicine
Subject: PA	Catalog Nbr: 0451

140454	Clinical Elective in Urgent Care
Subject: PA	Catalog Nbr: 0452

140499	Clinical Elective in Pain Management
Subject: PA	Catalog Nbr: 0453

140581	Pharmacovigilance Management
Subject: DRMD	Catalog Nbr: 0206
The principles and practices of individual case report management, signal detection management, and benefit-risk management.	

140582	Marketing Principles
Subject: DRMD	Catalog Nbr: 0263
The process of planning and executing on the concept, price, and services used in marketing pharmaceuticals in a way that is consistent with the product label.	

140584	Clinical, Regulatory, and Pharmacovigilance Operations
Subject: DRMD	Catalog Nbr: 0208
The basic operational activities that translate strategies into processes and procedures in conducting clinical trials, preparing documents for regulatory agencies, and conducting safety evaluations that are consistent with Good Operational Practices.	

140585	Capstone Preparation

Course Bulletin

Subject:	Catalog Nbr:			
DRMD	0298			
	2016 SUMR	Primary	Kenneth Kaitin	Kenneth.Kaitin@tufts.edu
	2016 SUMR	Primary	Paul Beninger	Paul.Beninger@tufts.edu

140586	Marketing Principles & Pricing
Subject:	Catalog Nbr:
DRMD	0268

Bringing together 2 related, important areas, this course covers 1) the process of planning and executing on the concept, price, and services used in marketing pharmaceuticals in a way that is consistent with the product label, and 2) pricing and reimbursement of FDA-approved pharmaceuticals.

140903	Clinical Elective in Surgery
Subject:	Catalog Nbr:
PA	0454

141021	Capstone Implementation			
Subject:	Catalog Nbr:			
DRMD	0299			
	2016 FALL	Primary	Kenneth Kaitin	Kenneth.Kaitin@tufts.edu
	2016 FALL	Primary	Paul Beninger	Paul.Beninger@tufts.edu

141022	Project Management
Subject:	Catalog Nbr:
DRMD	0211

141023	Principles in Manufacturing & Quality			
Subject:	Catalog Nbr:			
DRMD	0241			
	2016 SUMR	Primary	Paul Jansen	No Email on file.

141024	Medical Devices
Subject:	Catalog Nbr:

Course Bulletin

DRMD	0242

141030	Introduction to Clinical Neuroscience
Subject:	Catalog Nbr:
MBS	0230

Many undergraduates, particularly pre-meds, will have had some background in neuroscience, but few undergraduate courses focus on functional neuroanatomy, which is how neuroscience is taught in medical school. The goal of this course is to give MBS students who have had no prior exposure to anatomy-based neuroscience the background in functional neuroanatomy that will ease them into medical school neuroscience courses. The course integrates neuroanatomy with the underlying function, which makes the material more interesting and allows the student to put together the 'big picture' in a way that may be less possible when learning the material for the first time in the high pressure medical school environment. For example, the spinal cord is taught in the context of its functional units rather than simply as a series of anatomical slices with different components. Each functional unit is accompanied by clinical cases that give insight into how disruptions to function anatomy can give rise to dysfunction. For example, the basal ganglia circuit regulates intention to move and when various elements of this circuit degenerate, disorders of decreased movement (e.g. Parkinson's disease) and uncontrolled movement (e.g. Huntington's disease) become evident. We will explore how the symptoms of the disease reflect the underlying anatomy of the basal ganglia circuit and how the disorders come about - for example, genetic susceptibilities - and we will finish up by talking about the strengths and weaknesses of current treatment. Throughout the course, students will practice using deductive reasoning to solve clinical cases, thereby shoring up their understanding of how functionality relates to structure.

141123	Clinical Elective in In-Patient Medicine
Subject:	Catalog Nbr:
PA	0455

141312	Principles of Electrocardiography
Subject:	Catalog Nbr:
PA	0239

2017 SUMR Primary Richard Murphy Richard.Murphy@tufts.edu

This course is an elementary introduction into electrocardiography. Students will learn the basics of electrical impulses generated by the heart's electrical conduction system and the manifestation of these impulses on paper charts and ECG monitors. Students will learn to identify conduction abnormalities, heart blocks, ischemic and infarction changes as generated on ECGs. They will learn to calculate heart rates, axis deviations, and chamber hypertrophy.

141832	Clinical Elective in Oncology

Course Bulletin

Subject:	Catalog Nbr:
PA	0456

142540	Integration Seminar

Subject: PA Catalog Nbr: 0260

2017 FALL Primary Richard Murphy Richard.Murphy@tufts.edu

The integration seminar is a series of formative and summative academic events as part of the concluding curriculum and milestones of the PA curriculum. Students will present selected case studies from actual patient experiences during their clinical experiences. These presentations will be real cases the student has encountered, including: medical histories and physical findings, details of the diagnostic work up, differential diagnoses, treatments, and actual outcomes. Students will conclude with a discussion of the disease process and address any questions from the audience of fellow students and principal faculty. These presentations provide students with presentation experience, training in consolidation of clinical cases into teaching objects, and an opportunity to address challenging clinical questions from peers.

The two formative PACKRAT Examinations provide detailed content feedback for individual students as well as class performance benchmarked against the national cohort taking the examinations. Similarly, summative examinations such as the Comprehensive Examination and OSCE offer similar content feedback on student performance as well as performance as a cohort. Utilizing these results to pinpoint content or performance deficiencies, Principal Faculty will produce a customized board review lecture series designed to address cohort deficiencies in preparation for clinical practice and the national board examination (PANCE).

The OSCE results will also permit faculty to identify procedural and skill deficiencies in students and allow for individualized remediation sessions during the final weeks of the curriculum.

Utilizing the feedback from the OSCEs, Formative and Summative examinations, the final 4 weeks of the curriculum will be structured to include focused lectures on specific medical topics.