

University of Miami Bulletin, 2009 – 2010 Graduate Course Listing

*** 500 level courses appear in both the undergraduate and graduate course listing and may be considered undergraduate or graduate at the discretion of the department. Prerequisites, co-requisites and other course requirements are subject to change.**

University of Miami Bulletin, 2009-2010
Graduate Course Listing
SCHOOL OF MEDICINE
BIOCHEMISTRY & MOLECULAR BIOLOGY

BMB501 Senior Seminars

1 credits

Fall & Spring Semester

Students attend seminars by faculty or graduate students on recent research topics in Biochemistry and Molecular Biology. Students write short reports on these seminars and critically evaluate the presentations.

PREREQUISITE: PREREQUISITE OR COREQUISITE: BMB 506.

BMB502 Physical Biochemistry

3 credits

Offered By Announcement Only

Thermodynamics of biochemical reactions including chemical potential and equilibrium constants. Principles of diffusion and viscosity with applications to the ultracentrifuge, electrophoresis and chromatography are included. Topics in spectroscopy including visible, UV, IR absorption, and fluorescence. Biochemical applications of ORD, CD, NMR, and ESR. X-ray crystallography.

PREREQUISITE: BMB 407.

BMB505 Metabolic Processes

2 credits

Offered By Announcement Only

Intermediary metabolic processes. Catabolism of carbohydrates, lipids, and nitrogen compounds. Biosynthetic processes leading to amino acids, lipids, and isoprenoids, sugars, are addressed. Regulation of metabolism and cellular economy by various means, including hormones is also included. Lecture, 2 hours.

PREREQUISITE: BMB 506 OR PERMISSION OF INSTRUCTOR.

BMB506 Principles of Biochemistry and Molecular Biology

3 credits

Fall Semester

Protein structure and function, enzyme mechanism and kinetics, and metabolism, focusing on energy metabolism and central concepts of metabolic regulation and of molecular biology including nucleic acid structure, protein synthesis, and DNA replication. (Not open to students with credit in BMB 401 or 406; for undergraduate honors credit or graduate student not majoring in biochemistry.)

PREREQUISITE: A GRADE OF C OR BETTER IN CHM 202, BIL 150 AND 160 OR PERMISSION OF INSTRUCTOR.

BMB507 Proteins and Enzymes

3 credits

Spring Semester

Course analyzes the folding and binding of proteins, kinetics and mechanisms of enzyme action. For honors undergraduates. Not open to students in BMB 407.

PREREQUISITE: BMB 406 OR OR 506 OR PERMISSION OF INSTRUCTOR; FOR UNDERGRADUATE HONORS CREDIT OR GRADUATE STUDENTS NOT MAJORING IN BIOCHEMISTRY.

BMB508 Biochemistry and Molecular Biology Laboratory

1 credits

Offered By Announcement Only

Experience in a spectrum of biochemical experiments ranging from enzyme chemistry to recombinant DNA. Laboratory, 3 hours.

PREREQUISITE: PRE OR COREQUISITE: BMB 258 OR CHM 202

BMB509 Molecular Biology of the Gene I

3 credits

Fall Semester

Biochemical processes involved in the propagation and expression of genetic information in both prokaryotes and eukaryotes. Basic cellular processes of DNA replication, repair, genetic recombination, RNA transcription and processing, protein synthesis, control of gene expression, cell differentiation, and recombinant DNA technology. Reading includes both textbook assignments and original research papers.

PREREQUISITE: BMB 506 OR PERMISSION OF INSTRUCTOR.

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SCHOOL OF MEDICINE
BIOCHEMISTRY & MOLECULAR BIOLOGY

BMB511 Topics in Applied BCH and Molecular Biology

1- 3 credits

Fall & Spring Semester & First & Second Summer Session

Selected topics from the fields of applied and pure biochemistry and molecular biology taught as a tutorial.

PREREQUISITE: BMB 406 OR 506 AND PERMISSION OF INSTRUCTOR.

BMB545 Research Problems in Biochemistry and Molecular Biology

2- 3 credits

Fall & Spring Semester & First & Second Summer Session

Laboratory research problems in various fields of biochemistry, including literature search, experiment design, data gathering, and evaluation of results.

PREREQUISITE: PERMISSION OF INSTRUCTOR.

BMB601 Journal Club/Seminar

1 credits

Fall & Spring Semester

All registered students must participate in the Journal Club/Seminar. Students are required to critically review published paper(s) of their choice and describe in detail the findings described therein.

BMB609 Advanced Biochemistry and Molecular Biology

3 credits

Fall Semester

This course is a continuation course for BMB 616. It covers essentially the same topics as BMB 616 but at a more advanced level. It brings the student to the forefront of research in Molecular Biology. The course material is discussed exclusively in the form of original research papers. Based on this experience, students are required to propose experimental approaches to biological problems and defend them.

PREREQUISITE: BMB 616.

BMB610 Advanced Topics in Biochemistry

1- 5 credits

Fall & Spring Semester

Senior seminars designed to cover in depth recent developments in the field of biochemistry with the purpose of keeping advanced graduate students abreast with new theoretical and experimental findings. General subjects such as mechanisms of enzyme action, oxidative phosphorylation, active transport, metabolic controls and disorders, steroid biochemistry, and biochemical genetics are discussed. The detailed program is announced annually. Majors in Biochemistry and Molecular Biology are expected to take this course each semester in their second and third years.

PREREQUISITE: BMB 506 AND DEPARTMENTAL PERMISSION.

BMB611 Accelerated Basic Science Medical Curriculum

1-18 credits

Fall Semester

Beginning in the latter part of June each year, extending to the middle of February of the ensuing year, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. A single grade will be entered on the graduate transcript for this course.

PREREQUISITE: ADMISSION TO THE COMBINED M.D./PH.D. PROGRAM.

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BIOCHEMISTRY & MOLECULAR BIOLOGY

BMB614 Molecular Genetics

3 credits

Fall Semester

This course deals with mechanisms of inheritance with particular emphasis on fundamental genetic processes in bacteria, bacteriophage, fungi, and animal viruses. Topics include the nature of mutations and mechanisms of mutagenesis, genetic complementation, recombination, transposition, transcriptional and post-transcriptional regulation, yeast and other fungi as tools for eukaryotic molecular biology, human genetic analysis, and genetic mechanisms in bacterial and mammalian viruses.

PREREQUISITE: BMB 506 OR EQUIVALENT OR PERMISSION OF INSTRUCTOR.

BMB615 Structure and Function of Biological Macromolecules

4 credits

Spring Semester

The structure and function of proteins and their complexes with nucleic acids, carbohydrates, and lipids. Various biophysical methods used to investigate structure-function relationships are introduced and their applications illustrated by specific examples.

PREREQUISITE: BMB 506 OR EQUIVALENT, OR PERMISSION OF THE INSTRUCTOR.

BMB616 Biochemistry and Molecular Biology

4 credits

Offered By Announcement Only

The course begins with an introduction to the basic structures of proteins, protein folding, allostery, enzyme kinetics, and mechanisms of catalysis. This is followed by a thorough description of the molecular basis of cellular function and regulation in both prokaryotic and eukaryotic systems. The mechanisms of DNA replication, DNA repair, recombination, transcription, regulation of gene expression, and translation is discussed in detail. In addition, the methods of gene cloning, recombinant DNA technology, in vitro mutagenesis, DNA sequencing, and PCR applications are discussed. There are three hours of lecture and one hour of discussion per week. This course is designed for graduate students in the biological sciences and serves as a core course for several departments. A good background in Biology and Biochemistry is recommended.

PREREQUISITE: BMB 506 OR EQUIVALENT, OR PERMISSION OF INSTRUCTOR.

BMB617 Readings in Molecular Biology

1 credits

Fall Semester

Discussion of classical papers in molecular biology beginning with the concept of the gene and continuing into modern studies. Format consists of student presentations and group discussions.

PREREQUISITE: BMB 506 OR EQUIVALENT, OR PERMISSION OF INSTRUCTOR.

BMB631 Special Work

1- 3 credits

Fall & Spring Semester & First & Second Summer Session

Special work, lecture, or laboratory or a combination of these, as determined by advisor in accord with student's individual interest.

PREREQUISITE: APPROVAL OF COMMITTEE.

BMB645 Research Problems in Biochemistry, Cell and Molecular Biology

2- 3 credits

Fall & Spring Semester & First & Second Summer Session

Laboratory research problems in various areas of biochemistry, cell biology, and molecular biology, including literature search, experimental design, data gathering, and evaluation of results. This course is the mechanism by which graduate laboratory rotations are done in preparation for selection of Ph.D. mentor.

PREREQUISITE: BMB 506 OR EQUIVALENT OR PERMISSION OF INSTRUCTOR.

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BMB680 Research Ethics

0 credit

Fall Semester

The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Department or Program. This is a six-hour course and will be given in two sessions of three hours each.

PREREQUISITE: PERMISSION OF THE GRADUATE ADVISOR.

BMB710 Master's Thesis

1- 6 credits

Fall & Spring Semester & First & Second Summer Session

The student working on his/her master's thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

BMB720 Research in Residence

0 credit

Fall & Spring Semester & First & Second Summer Session

Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in BMB 710 (usually six credits). Credit not granted. May be regarded as full time residence.

BMB730 Doctoral Dissertation

1-12 credits

Fall & Spring Semester & First & Second Summer Session

Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of BMB 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

BMB740 Doctoral Dissertation- Post Candidacy

1-12 credits

Fall Semester

PREREQUISITE: NONE

BMB750 Research in Residence

0 credit

Fall & Spring Semester & First & Second Summer Session

Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

CANCER BIOLOGY

CAB601 CAB Student Seminar

1 credits

Fall Semester

This course offers instruction about the fundamental elements of scientific speaking. The ability to communicate effectively is essential for scientists. Using a series of sample-based lectures and discussion groups students will be exposed to various oral presentations. In addition, during the first year, all students will be asked to present a 20 minute seminar following each of their rotation projects. Once students enter a research laboratory, students will be required to present their research each year as a one hour seminar.

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CANCER BIOLOGY

CAB602 Approaches to Understanding Cancer

2 credits

Fall Semester

This interactive lecture course will teach students specific methodologies used to solve problems in cancer research. By using specific examples of basic and clinical avenues of research students will be taught the use of various approaches to address problems in cancer biology, i.e., reasoning and logic. The overall goal is to expose students to how different approaches are used and integrated to solve specific research questions and the critically interpret experimental design and data. The use and advantages of various approaches, e.g., biochemical, molecular, genetic, immunological, epidemiology, and the use of model systems e.g., cell and animal models will be discussed. Methods used in clinical trials will be presented. Emphasis will be placed on research strategy and design, limitations and strengths of various techniques.

CAB603 CAB Clinical Oncology

2 credits

Fall Semester

Year 1: During the first year students will attend a series of lectures by CAB physician mentors that will discuss clinical aspects of cancer treatment for specific patients with an emphasis on continuity of care of newly diagnosed patients between disciplines. Students will attend existing Sylvester Cancer Center tumor boards on a rotating monthly basis to understand how the treatment of cancers varies depending on histology.

CAB604 Scientific Reasoning and Logic in Cancer Biology: Bench to Bedside

3 credits

Spring Semester

One aspect of the Cancer Biology PhD Program is to train students in the application of basic research to clinical problems i.e., translational research. The goal of this course is to expose students to the scientific reasoning the logic behind solving problems in clinical cancer research. The philosophy of this course is to teach students how knowledge obtained from basic research laboratories is applied to clinical problems including prevention, diagnosis, prognosis and therapeutic treatment of cancer. This course has 11 weekly segments, each of which has a different theme plus student presentations.

CAB605 Tumor Boards

1 credits

Fall Semester

In the spring of their first year, students will attend Tumor Boards at UM/ Sylvester. This treatment planning approach in which a number of oncologists who are experts in different specialties review and discuss the medical condition and treatment options of a patient. It will allow the students to interact with physicians and learn how pathologists, surgeons, medical oncologists and radiation oncologists review specific cases and create customized treatment plans. Examples of cases include patients with Solid tumors (i.e., Breast, Colon, Liver, Prostate), Hematologic tumors (i.e., Leukemia, Lymphoma), and Sarcomas (i.e., osteosarcoma, soft tissue).

CAB606 Seminar Courses I

1 credits

Fall Semester

FIRST YEAR students must attend the Program seminars and will be graded pass/ fail based on their attendance.

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CANCER BIOLOGY

CAB611 Accelerated Basic Science Medical Curriculum

1-18 credits

Fall Semester

Beginning in the latter part of June each year, extending to the middle of February of the ensuing year, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. Single grade will be entered on the graduate transcript for this course.

PREREQUISITE: ADMISSION TO THE COMBINED M.D./PH.D. DEGREE PROGRAM.

CAB612 Special Topics in Cancer Research - Viral Oncology and Tumor Immunology Module

2 credits

Spring Semester

This module emphasized state of the art knowledge of each discipline, student participation in a problem based learning context. Topics include viral carcinogenesis and epidemiology, Hepatitis, Herpes, Epstein Barr and Human Papilloma Viruses, Kaposi's Sarcoma, viral induced lymphomas, viral oncolysis, and mechanisms of anti-tumor immunity.

PREREQUISITE: NONE

CAB613 Special Topics in Cancer Research - Molecular Cancer Therapeutics Module

2 credits

Spring Semester

This module explores the signal transduction pathways critical for cancer cell proliferation and survival that may provide new therapeutic targets, approaches for identification and validation of molecular targets within these pathways.

Students are introduced to the strategies used in the discovery and design of biological and drug based therapies, and the implementation of clinical trials.

PREREQUISITE: NONE

CAB614 Special Topics in Cancer Research - Cancer Epidemiology, Prevention & Beh. Oncology

2 credits

Spring Semester

This module explains the goals and techniques of researchers in the fields of cancer epidemiology and biobehavioral oncology. These include understanding the social, environmental, and biological reasons for cancer disparities among different populations. Cancer epidemiologists seek to define the molecular and genetic mechanisms of cancer risk and progression with the aim of developing predictive models in treatment response. The following themes in biobehavioral oncology are explored: psychosocial intervention, biobehavioral and psychosocial intervention to the community; health behavior change and biobehavioral mechanisms in persons at risk for and diagnosed with cancer; predictors of QOL and late effects of cancer treatment and development of preventative interventions.

PREREQUISITE: NONE

CAB617 Advance Course on Viruses, Immunity, and Cancer

3 credits

Spring Semester

This is an advanced course on Viral Oncology and Tumor Immunology and Immunotherapy that emphasizes state of the art knowledge of each discipline, student active participation in a problem based learning-like context, and national expert visitor teaching.

The structure of the classes is based on the concept of Problem Based Learning.

PREREQUISITE: OPEN TO 2ND YEAR STUDENTS FROM ANY GRADUATE PROGRAM

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CANCER BIOLOGY

CAB620 Dialogues with Cancer Clinicians (PIBS Module)

1 credits

Fall & Spring Semester

This module features physician mentors of the Cancer Biology Graduate Program who will discuss clinical aspects of cancer treatment with an emphasis on continuity of care of newly diagnosed patients between disciplines and will articulate unmet clinical needs and questions. Mentors will provide clinical perspectives on their areas of specialization as it relates to patient care including diagnosis, staging, therapy, and outcomes.

PREREQUISITE: NONE

CAB630 Colloquia in Clinical Cancer Research

2 credits

Fall Semester

Students will attend Colloquia at which faculty members present seminars on their current clinical research topics and methods of investigation. Here students will learn the rationale and methodologies that researchers are using to approach a problem in clinical cancer research. Topics will cover the areas of prevention, control, diagnosis (molecular and microscopic pathology), prognosis and therapeutics.

CAB631 Lab Rotations

1- 6 credits

Fall Semester

During the first year students will be required to carry out three research rotations. The students will then select their PhD advisor in June of their first year. The evaluation will be based on an oral presentation (20 minutes and 10 minutes for questions) by the student to a committee consisting of three faculty members, other than the rotation advisor. The rotation mentor will submit a confidential written evaluation of the student in a standard format to be designed by the Curriculum committee. It will include a statement regarding the willingness of the mentor to accept the student into the lab for their thesis research.

CAB650 Logic and Reasoning in Translational Cancer Research: Bench to Bedside Part 1

3 credits

Spring Semester

PREREQUISITE: MCP 655, MINIMUM OF TWO CAB 610 MODULES, CAB 605, CAB 620

CAB651 Logic and Reasoning in Translational Cancer Research: Bedside to Bench Part 2

3 credits

Fall & Spring Semester

An important facet of the Cancer Biology PhD Program is the training of students in the interrelationships between basic research and clinical medicine i.e., translational research. The goal of this advanced course is to expose students to the scientific reasoning and logic underlying problem solving in clinical cancer research. This course will instill in students the ability to integrate information and develop the thought processes necessary to critically evaluate information in the literature and experimental approaches, conceptualize problems in the field and identify areas for scientific exploration. This course is divided into two parts. In Part I Bench to bedside, students learn how the knowledge obtained from basic research laboratories is applied to clinical problems including prevention, diagnosis, prognosis and therapeutic treatment of cancer. Specific examples of translational research, i.e., laboratory to clinic will be emphasized. In part II Bedside to Bench, students learn the key role of clinical observation in identifying basic research problems.

PREREQUISITE: MCP 665, MINIMUM OF TWO CAB 610 MODULES, CAB 605, CAB 620

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CANCER BIOLOGY

CAB680 Research Ethics

0 credit

Fall Semester

The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Department or Program. This is a six-hour course and will be given in two sessions of three hours each.

PREREQUISITE: PERMISSION OF THE GRADUATE ADVISOR.

CAB730 Dissertation Research

1-12 credits

Fall Semester

Required of all candidates for the Ph.D. The student will enroll for credits as determined by the Office of Graduate Studies but not less than a total of 24. Not more than six in the summer. If a student has a) passed qualifying exam(s) and (b) is engaged in an assistantship, he/she may still take the maximum allowable credits.

CAB740 Doctoral Dissertation- Post Candidacy

1-12 credits

Fall Semester

CAB750 Research in Residence

0 credit

Fall Semester

Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

EPIDEMIOLOGY & PUBLIC HEALTH

EPH501 Medical Biostatistics I

3 credits

Fall Semester

Introduction to probability and statistics including descriptive statistics, tests of hypothesis, regression analysis, contingency tables, nonparametric tests, and life tables. Students gain hands-on experience in the analysis of medical data using several computer systems and at least one of the different statistical packages such as: BMDP, SAS, PSTAT, SYSTAT, and Minitab.

PREREQUISITE: ABILITY TO USE A SPREADSHEET PROGRAM ON A PERSONAL COMPUTER. OPEN ONLY TO EPH MAJORS.

EPH502 Biostatistics II

3 credits

Spring Semester

Continuation and elaboration of EPH 501. Topics include design of factorial experiments, analysis of variance and variance components, multiple linear regression, and life tables.

PREREQUISITE: EPH 501 OR PERMISSION OF INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

EPH503 Applied Data Management and Analysis

3 credits

First & Second Summer Session

The course is designed to introduce students to applied quantitative methods through both lecture-based and experimental strategies. Emphasis will be placed on data collection, data management, and conceptual use of various analytic techniques.

PREREQUISITE: EPH 501, EPH 502 OR PERMISSION OF INSTRUCTOR

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SCHOOL OF MEDICINE
EPIDEMIOLOGY & PUBLIC HEALTH

EPH512 Global Health

3 credits

Fall Semester

This seminar examines current global public health issues, governance and decision-making challenges for the 21st Century across developing, transitioning, and developed countries. Topics of discussion include new actors for world health in the era of globalization; linking human development, poverty and health inequities; social, cultural and ethical considerations for health planning; role of industry, trade and public health; evidence based research for improved global health initiatives; foreign policy and health security challenges associated with emergence and re-emergence of infectious diseases and public and private partnerships in global health. Open only to EPH majors.

PREREQUISITE: OPEN ONLY TO EPH MAJORS.

EPH513 International Health Systems

3 credits

Fall Semester

Students will study international health from a broad prospective of global health issues and international health systems. This course will include a critical analysis of health systems in both developing and developed countries through comparison with the World Health Organization's model and the health system in the United States. A variety of health factors will be examined including the role of public health and public health funding.

PREREQUISITE: PERMISSION OF PROGRAM DIRECTOR OR ADMINISTRATOR FOR REGISTRATION

EPH514 Mental Health and Mental Illness: Public Health Perspective

3 credits

Fall Semester

The purpose of this course is to give an overview of mental health and illness as a public health issue. This will include an analysis of how mental illness became a major public health concern both in the United States and Globally. The use of population-based epidemiological studies to inform the development of public policy will also be explored. In addition, an analysis of mental health programs in various community settings such as schools, the workplace and in the context of disasters will provide an opportunity to understand how theories regarding the etiology of mental illness are applied in the development of prevention and intervention programs.

PREREQUISITE: PERMISSION OF PROGRAM DIRECTOR FOR NON-EPH MAJORS.

EPH520 Health Education and Behavior

3 credits

Spring Semester

Educational processes with special emphasis on the social and cultural determinants of health behavior, health education as a process of social change, and community based health education organizations. Open only to EPH majors.

PREREQUISITE: OPEN ONLY TO EPH MAJORS.

EPH521 Fundamentals of Epidemiology

3 credits

Fall Semester

Principles and methods of epidemiology. Descriptive epidemiology, environmental and other risk factors, detection of outbreaks, basic demography, and etiologic studies.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

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EPIDEMIOLOGY & PUBLIC HEALTH

EPH522 Applied Health Education

3 credits

Fall Semester

The goal of this course is to introduce students to the principals of Applied Health Education utilizing the theoretical background they received in the course prerequisite, EPH 520. Means of affecting health behavior change will be examined as well as methods of health communication, needs assessment and issues of cultural competency. Students will explore various settings in which health educational material is distributed including clinical settings, the Internet and through the mass media. Students will develop their own binder of high quality health educational information and develop their own educational material on a topic of their choice.

PREREQUISITE: EPH 520. OPEN ONLY TO EPH MAJORS.

EPH525 Ethical Issues in Epidemiology

3 credits

Fall Semester

The course identifies and analyzes ethical issues in epidemiologic practice and research. Issues include data acquisition and management, confidentiality, valid consent, advocacy, public policy, subgroup stigma, research sponsorship, conflicts of interest, communication of risk, and international and intercultural difference.

PREREQUISITE: EPH 501 AND 521 OR PERMISSION OF INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

EPH541 Integrated Aspects of Environmental Health

3 credits

Spring Semester

Interdisciplinary scope of environmental health problems. Development of a practical, dynamic model for integrating fundamental concepts from a variety of environmental disciplines. Open only to EPH majors.

PREREQUISITE: OPEN ONLY TO EPH MAJORS.

EPH561 Public Health Nutrition

3 credits

Spring Semester

This course provides a dynamic, interactive approach to public health designed to prepare students in basic policy, epidemiology, and health education related to nutrition. Recognizing the multiple social, cultural, environmental, and physiological factors leading to nutritional disease. The course includes experts from a variety of disciplines. Public health nutrition addresses issues germane to the public's health by elucidating their extent, determinants and consequences, and the policies and programs to address them. Open only to EPH majors.

PREREQUISITE: OPEN ONLY TO EPH MAJORS.

EPH570 Bioterrorism: The Public Health Challenge

3 credits

Fall Semester

Studies the key elements of bioterrorism and the challenges to effective public health response. A principal focus of the course is the epidemiologic triad of agent, host, and environment applied to bioterrorism. The course explores the roles of epidemiologists and public health professionals working in tandem with medical, first-responder, law enforcement, Department of Defense and volunteer participants in prevention and response to bioterrorist attacks. This course is intended for graduate students in public health and social sciences, medical, and health care professionals.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR/PROGRAM.

EPH571 Maternal and Child Health

3 credits

Spring Semester

Preventative and therapeutic concepts pertinent to the reduction of morbidity and mortality among mothers and their children.

PREREQUISITE: EPH 521 OR PERMISSION OF THE INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

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EPIDEMIOLOGY & PUBLIC HEALTH

EPH572 Public Health Law

3 credits

Fall & Spring Semester

This course is designed for non-law students studying in epidemiology and public health. The course will begin with a general overview of the fundamental principles and processes of the US legal system, focusing on public health law and ethics. Topics will include privacy, communications, screening and vaccinations, economic regulations and public health reform.

PREREQUISITE: PERMISSION OF INSTRUCTOR(S). OPEN ONLY TO EPH MAJORS.

EPH581 Advanced Topics

0- 4 credits

Offered By Announcement Only

Subject matter offering based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule following the title "Advanced Topics".

PREREQUISITE: CORE REQUIREMENTS FOR MPH PROGRAM OR PERMISSION OF INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

EPH583 AIDS as a Public Health Issue

3 credits

First Summer Session

Course examines AIDS as a public health issue, including material on HIV epidemiology, etiology, treatments, co-factors, transmission, behavioral change, psychological factors, sociocultural factors, political aspects, legal issues, policy formulation, and medical ethics. The course primarily covers AIDS in North America and Africa, with some attention to other geographical areas. Open only to EPH majors.

PREREQUISITE: OPEN ONLY TO EPH MAJORS.

EPH584 Special Topics

3 credits

Fall & Spring Semester & First & Second Summer Session

This course is designed to allow the listing of special topics within the Department of Epidemiology and Public Health and cross-list topics with other departments' offerings.

PREREQUISITE: PERMISSION OF GRADUATE PROGRAM DIRECTOR. COURSE PRE-REQUISITES WILL VARY DEPENDING ON THE COURSE TOPIC ASSIGNED.

EPH585 Perinatal Epidemiology

3 credits

Fall & Spring Semester

This survey course includes vital statistics data and sources, prenatal care, the influence of maternal and paternal age, maternal obesity, smoking, and alcohol use in pregnancy outcomes, infertility and assisted conceptions - including multiple births, birth defects, cerebral palsy, prematurity, preeclampsia and maternal and infant mortality.

PREREQUISITE: EPH 521 AND PERMISSION OF INSTRUCTOR.

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EPIDEMIOLOGY & PUBLIC HEALTH

EPH590 Adolescent Substance Abuse: Etiology, Prevention, and Treatment

3 credits

Spring Semester

This course covers the specialty of adolescent substance abuse. Approached from a systemic and multidisciplinary perspective, the course first provides an historical exploration of teen alcohol and drug abuse in the U.S. and other cultures. Next we focus on the etiology or causes of teen alcohol and drug problems with a highlight-oriented review and summary of twenty years of research on the basic science aspects of adolescent substance misuse. Using this foundation, the focus shifts to more applied aspects of the field. The middle and last third of the course cover prevention and treatment. Here we cover contemporary prevention and treatment theory, how research has informed intervention thinking, philosophy, design and evaluation, and how prevention and treatment studies are influencing public policy in substance abuse and related areas such as juvenile justice and child welfare.

PREREQUISITE: JUNIOR, SENIOR OR GRADUATE STANDING.

EPH600 Research Seminar

1- 3 credits

Fall & Spring Semester & First & Second Summer Session

Course consists of bi-weekly research seminars. Seminar format is individual student-led presentations and discussions with faculty supervision. Topics may include epidemiologic methods, analytic strategies, study design, conduct of human subjects research, bio-ethics, and other pertinent topics. Ph.D. students are required to complete 3 credit hours of EPH 600 prior to graduation.

PREREQUISITE: ADMISSION TO THE PH.D. IN EPIDEMIOLOGY PROGRAM. OPEN ONLY TO EPH MAJORS.

EPH603 Statistical Methods in Epidemiology

3 credits

Fall Semester

Advanced statistical methods used in analyzing data from epidemiologic investigations. Topics include Mantel-Haenszel chi-square, interaction, standardization of rates, incidence density, logistics regression, and other special topics.

PREREQUISITE: EPH 501 AND 521. OPEN ONLY TO EPH MAJORS.

EPH604 Clinical Trials

3 credits

Spring Semester

Planning, design, analysis, and data management for clinical therapeutic and prophylactic trials. Illustrations are provided through case examples.

PREREQUISITE: EPH 502 AND PERMISSION OF INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

EPH605 Statistical Methods in Epidemiology II

3 credits

Spring Semester

Continuation and elaboration of EPH 603. Advanced statistical methods used in analyzing data from epidemiologic investigations. Topics include Kappa statistics, life tables, survival analyses, logistic regression, Poisson regression, log linear models, clusters, meta-analysis, and other special topics.

PREREQUISITE: EPH 603 AND PERMISSION OF INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

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EPIDEMIOLOGY & PUBLIC HEALTH

EPH610 Public Health Surveillance Systems

3 credits

Fall Semester

The goal of this course is to make students aware of all aspects that must be considered when designing or working with a Public Health Surveillance System (PHSS). The lectures will concentrate on the different types of PHSS, data base structures, practical design elements, data gathering strategies, quality control and evaluation considerations and the role of PHSS within the public health community. Additionally, students will be given the opportunity to utilize their analytical skills and demonstrate their mastery of statistical software packages by performing three preliminary analysis of a real PHSS data set.

PREREQUISITE: EPH 501 AND 521 OR PERMISSION OF PROGRAM DIRECTOR

EPH611 Cancer Epidemiology

3 credits

Spring Semester

This course covers the basic epidemiology of cancer. Major sites and exposures are stressed, highlighting descriptive, etiologic and preventive aspects. A major course project and one final exam are included.

PREREQUISITE: PERMISSION OF INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

EPH612 Forensic Epidemiology

3 credits

Fall Semester

The course emphasizes the analysis of forensic and medical investigative aspects of the subject as well as the epidemiologic patterns and significance. Topics include suicide, vehicular accidents, industrial deaths, drownings, drug related fatalities, abuse, and fire related deaths. Observations of autopsies are also incorporated into the course.

PREREQUISITE: EPH 501 AND 521 OR PERMISSION OF INSTRUCTOR.

EPH620 Cardiovascular Disease Epidemiology and Prevention

3 credits

Fall Semester

Course aims to teach and train MPH students in the epidemiology and prevention of cardiovascular and cerebrovascular diseases which are the leading causes of morbidity and mortality among the adult U.S. population. Essential knowledge for those working in the area of public health is emphasized.

PREREQUISITE: EPH 501 AND 521 OR PERMISSION OF INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

EPH621 Chronic Disease Epidemiology

3 credits

Spring Semester

The major chronic diseases (e.g. Heart Disease, Cancer, diabetes) their population impact and methods of prevention. Specialized problems associated with chronic disease studies are also included.

PREREQUISITE: EPH 521. OPEN ONLY TO EPH MAJORS.

EPH622 Infectious Disease Epidemiology and Control

3 credits

Fall Semester

Surveillance, investigation, control, and problems related to infectious diseases.

PREREQUISITE: EPH 501 AND 521. OPEN ONLY TO EPH MAJORS.

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EPIDEMIOLOGY & PUBLIC HEALTH

EPH623 Epidemiology and Public Health Aspects of Diabetes Mellitus

3 credits

Spring Semester

This course presents an overview of the epidemiology and public health impact of an important chronic disease, diabetes mellitus (DM). Topics include the classification and descriptive epidemiology of DM and associated health complications, disease screening, evaluation of risk factors, methodological issues associated with DM research, DM among special populations, and the public health impact of DM in the U.S.

PREREQUISITE: EPH 521 OR PERMISSION OF INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

EPH624 Advanced Applied Epidemiology

3 credits

Spring Semester

Principles and methods of analytical studies including case-control, cohort, and clinical trials. Emphasis is placed on quantitation of influences of change, bias, and confounding in design, conduct, analyses, and interpretation of epidemiologic studies. Evaluation of cause-effect relationships is included.

PREREQUISITE: EPH 521 OR PERMISSION OF THE INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

EPH630 Drug Abuse Epidemiology

3 credits

Fall Semester

The purpose of this course is to educate students how to design, implement, and conduct studies of drug abuse epidemiology and its related scientific disciplines.

PREREQUISITE: EPH 501 AND 521. OPEN ONLY TO EPH MAJORS.

EPH631 Public Health Administration

3 credits

Fall Semester

An overview of the historical background, philosophy, and purpose of public health. Relationship between government, law, and public health. Organization, management, and intergovernmental relationships of public health agencies in the United States at the federal, state, and local level. Basic principles of management, decision making, and prioritizing in public health are discussed. Overview of programs and services provided by public health organizations with emphasis on current public health issues and problems are also included. Open only to EPH majors.

PREREQUISITE: OPEN ONLY TO EPH MAJORS.

EPH640 Basic Pathology and Patho-physiology

3 credits

Fall Semester

The course emphasizes basic patho-physiological mechanisms and diseases of particular interest to students of public health. Students obtain an understanding of basic pathological processes, nomenclature of pathological findings, and common natural and unnatural diseases affecting various body systems. Observations of autopsies and the gross pathology of selected organs are also incorporated in the course.

PREREQUISITE: EPH 521 AND PERMISSION OF INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

EPH641 Research Methods

3 credits

Fall Semester

Purpose of the course is to provide students with a sound understanding of the fundamental concepts and methods for conducting public health research. After a brief introduction to the philosophy of science, the major emphasis in the early portion of the course is on research conceptualization, design and measurement, with a particular focus on the logic of minimizing rival alternative explanations of finding for experimental and quasi-experimental studies.

PREREQUISITE: EPH 501, 521 OR PERMISSION OF INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

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SCHOOL OF MEDICINE
EPIDEMIOLOGY & PUBLIC HEALTH

EPH642 Survey Methods: Planning and Conducting Health Surveys

3 credits

Spring Semester

The purpose of this class is to introduce students to theories, principles, methods, and best practices of survey design, measurement, and sampling as applied to health surveys. Students develop an understanding of the survey research process including problem definition, strengths and limitations of survey research, survey design, survey sampling techniques, data entry and management, data analysis, and proper reporting of results.

PREREQUISITE: EPH 501, 521, AND 641 OR PERMISSION OF INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

EPH643 Qualitative Research Methods in the Social Sciences

3 credits

First Summer Session

The course has been designed to provide an introduction to qualitative research methods. In addition to providing the student with the theoretical basis of a variety of qualitative methods, this course also includes practical experience in designing, conducting, and reporting on a qualitative research project.

PREREQUISITE: EPH 521 AND 501 OR PERMISSION OF INSTRUCTOR.

EPH644 Fundamentals of Program Evaluation

3 credits

Spring Semester

Fundamentals of Program Evaluation was developed as a survey course directed specifically at providing an overview of the broad area of program evaluation. At its base, program evaluation is the investigation of a program's characteristics and merits. In context of health care, the purpose of program evaluation is to provide information in the effectiveness of programs or interventions so as to optimize the outcomes, efficiency and quality of health care. Evaluation of a program is an essential part of the successful implementation and conduct of any health care project or intervention, and should ideally be designed along with the project itself. Program evaluation activities can use a wide range of methodologies (e.g., qualitative, quantitative), analyze different aspects of a program (e.g., structure, activities, organization), and have a large number of intended outcomes (e.g., achievement or program's goals objectives, extent of program impact, program cost).

PREREQUISITE: SUCCESSFUL COMPLETION OF EPH 501 AND EPH 521

EPH645 Behavioral Epidemiology

3 credits

Fall Semester

A sub-discipline of epidemiology with a principal focus on lifestyle behaviors that are health-enhancing or health-compromising. With a focus on health behavior rather than disease endpoints, behavioral epidemiology has a primary prevention orientation. This course explores epidemiologic approaches to description/intervention upon dietary behaviors, exercise, substance use behaviors (cigarettes, alcohol, illicit drugs), and sexual behaviors.

PREREQUISITE: EPH 521 AND PERMISSION OF THE INSTRUCTOR. OPEN ONLY TO EPH MAJORS.

EPH647 Community-based Participatory Research

3 credits

Fall Semester

Community-based participatory research (CBPR) is methodology, increasingly popular in public health and other disciplines, which invites community collaboration throughout the research process from conceptualization of study focus to dissemination of findings. This course will provide an opportunity for medical and graduate students to better understand the process by which community members and academic researchers work collectively to address health disparities and influence social change.

PREREQUISITE: EPH 521 FUNDAMENTALS OF EPIDEMIOLOGY

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EPIDEMIOLOGY & PUBLIC HEALTH

EPH650 Health Economics for Evaluation and Policy

3 credits

Spring Semester

This course centers on a discussion of the criteria used to evaluate the allocation of resources and analyze the behavior of two of the principal actors—consumers and firms. The principles of microeconomics are presented in the context of health care systems and markets. Numerous real-world issues and case studies are used to demonstrate economic decision-making techniques, especially for health care organizations and consumers.

PREREQUISITE: EPH 501 AND 521. OPEN ONLY TO EPH MAJORS.

EPH651 Survival Analysis in Clinical Trials

3 credits

Fall Semester

Statistical methods for analysis and interpretation of survival data arising from clinical trials. Topics include survival curves, estimation of sample size, survival curves, proportional-hazard models, time dependent variables, and prognostic indices.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR AND EPH 501 AND 502. OPEN ONLY TO EPH MAJORS.

EPH652 Health Policy

3 credits

Spring Semester

Part I will examine seven models encompassing different perspectives on public health: philosophy, political theory and politics, law, economic, science and information culture and religion, and organization and management, including how they relate and their relevance in formulating, implementing, and evaluating public policy.

Part II will examine the policy making process including how issues reach the government agenda, how laws are formulated, and how the process affects substance.

Part III describes the core elements of policy analysis including: problem definition; background; political, economic, and social landscape; development of policy options; and recommendation. It will also include discussions of how to find and analyze documents and data as well as discuss the financing of health care.

PREREQUISITE: PERMISSION OF PROGRAM DIRECTOR.

EPH680 Practical Field Experience

1- 6 credits

Fall & Spring Semester & First & Second Summer Session

Practical field experience for MSPH/MPH students, e.g. an internship with a physician, public health department, clinic, school system, Health Center, or an ongoing epidemiological project.

PREREQUISITE: CORE REQUIREMENTS FOR MPH PROGRAM. OPEN ONLY TO EPH MAJORS.

EPH681 Geographic Information Systems in Public Health

3 credits

Spring Semester

Learn GIS techniques to interpret, analyze, and understand spatial patterns utilizing the software Arc View.

PREREQUISITE: OPEN ONLY TO EPH MAJORS.

EPH682 Advanced Individual Study

1- 3 credits

Fall & Spring Semester & First & Second Summer Session

Individual work on a special project under faculty guidance.

PREREQUISITE: PERMISSION OF THE DIRECTING FACULTY MEMBER AND THE DIRECTOR OF GRADUATE PROGRAMS. OPEN ONLY TO EPH MAJORS.

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EPIDEMIOLOGY & PUBLIC HEALTH

EPH699 Public Health Projects

1- 6 credits *Fall & Spring Semester & First & Second Summer Session*
Research and/or design projects. Individual investigation of current public health problems. Required of all MPH students.
PREREQUISITE: PERMISSION OF MASTER'S PROGRAMS DIRECTOR AND COMPLETION OF AT LEAST 12 CREDITS IN EPH. OPEN ONLY TO EPH MAJORS.

EPH720 Research in Residence

0 credit *Fall & Spring Semester & First & Second Summer Session*
Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in EPH 710 (usually six credits). Credit not granted. May be regarded as full time residence.

EPH725 Continuous Registration--Master's Study

0 credit *Fall & Spring Semester & First & Second Summer Session*
To establish residence for MPH students who are preparing for project presentation. Credit not granted. Regarded as full time residence.

EPH730 Doctoral Dissertation

1-12 credits *Fall & Spring Semester & First & Second Summer Session*
Required of all candidates for the PhD. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of EPH 730 may be taken in a regular semester, nor more than six in a summer session.

EPH740 Doctoral Dissertation- Post Candidacy

1-12 credits *Fall Semester*

EPH750 Research in Residence

0 credit *Fall & Spring Semester & First & Second Summer Session*
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

HUMAN GENETICS & GENOMICS

HGG601 Seminar/Journal Club

1 credits *Fall & Spring Semester*
All registered students must participate in the Seminar/Journal Club. Students are required to review published papers and discuss in detail the findings described therein.
PREREQUISITE: NONE

HGG611 Accelerated Basic Science Medical Curriculum

1-18 credits *Fall & Spring Semester*
Beginning in the latter part of June each year, extending to the middle of February of the ensuing year, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. A single grade will be entered on the graduate transcript for this course.
PREREQUISITE: ADMISSION TO THE COMBINED M.D./PH.D. PROGRAM

HGG730 Doctoral Dissertation- Pre Candidacy.

1-12 credits *Fall & Spring Semester*
1 - 12 credit course for Doctoral candidates working on pre-candidacy dissertation.
PREREQUISITE: NONE

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SCHOOL OF MEDICINE
HUMAN GENETICS & GENOMICS

HGG740 Doctoral Dissertation - Post Candidacy

1-12 credits

Fall Semester

1-12 credit course for Doctoral Candidates working on dissertation post candidacy.

INTERDISCIPLINARY BIOMEDICAL STUDIES

IBS602 Interdisciplinary Biomedical Studies II

4 credits

Spring Semester

A continuation of IBS 602. Topics include cell organization, membrane structure, signal transduction, transport across cell membranes, protein sorting, nerve signaling, microfilaments and microtubules, cell-cell and cell-matrix interactions, cell cycle, cancer, and immunity.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR.

IBS603 Interdisciplinary Biomedical Studies II

1- 4 credits

Fall Semester

PREREQUISITE: IBS 601 OR PERMISSION OF THE INSTRUCTOR

IBS611 Accelerated Basic Science Medical Curriculum

1-18 credits

Fall & Spring Semester

The following accelerated and intensive basic science medical curriculum is offered: Biochemistry, Genetics and Cell Biology, Medical Microbiology and Immunobiology, Gross Anatomy, Histology and Pathology, Physiology and Pharmacology, Neuroscience and Behavioral Science, and the Cardiovascular System. A single grade will be entered on the graduate transcript for this course.

PREREQUISITE: ADMISSION TO THE COMBINED M.D./PH.D. PROGRAM.

IBS612 Accelerated Basic Science Medical Curriculum II

1-18 credits

Fall & Spring Semester & First & Second Summer Session

Beginning in the latter part of June each year, extending to the middle of May of the ensuing year, the following accelerated and intensive medical curriculum is offered: Respiratory System, Renal System, Dermatology and Ophthalmology, Gastrointestinal System and Human Nutrition, Human Anatomy, Problem based learning/Rheumatology, Hematology and Oncology. A single grade will be entered on the graduate transcript for this course.

PREREQUISITE: ADMISSION TO THE COMBINED M.D./PH.D. PROGRAM.

IBS620 Scientific Writing I

2 credits

Fall & Spring Semester

This course will help students to strengthen their scientific writing skills. We will review the standards and expectations of scientific discourse, focusing on the scientific paper as a refined tool for conveying research findings in a clear, objective fashion and positioning the author/s within a specific research community. Sequenced writing assignments will address the functions and conventions of the various forms of scientific communication, from short correspondences to full research reports to review articles. The proper use and presentation of graphs and illustrations will also be covered.

IBS631 Laboratory Research

1- 6 credits

Fall & Spring Semester & First & Second Summer Session

Laboratory rotations to gain experience with a variety of modern techniques in molecular and cellular biology.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR.

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INTERDISCIPLINARY BIOMEDICAL STUDIES

IBS680 Research Ethics

0 credit

Fall Semester

0 Credit. The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the department or program. This is a six-hour course and will be given in two sessions of three hours each.

PREREQUISITE: PERMISSION OF ADVISOR.

IBS683 Professional Skills and Ethics I

1- 3 credits

Fall & Spring Semester & First & Second Summer Session

Two-day intensive workshop involves a combination of lectures, discussions, readings and writing to enhance the professional development of beginning graduate students. Topics include strategies for selecting mentors, professional writing, giving oral presentations and research ethics.

IBS684 Professional Skills and Ethics II

1- 3 credits

Fall & Spring Semester & First & Second Summer Session

Two-day intensive workshop involves a combination of lectures, discussions, readings and writing exercises, and practical experiences to enhance the professional development of advanced graduate students, postdoctoral fellows and junior faculty. Topics include career choices, job search strategies and skills, fellowship/grant applications and research ethics.

MICROBIOLOGY & IMMUNOLOGY

MIC501 Medical Microbiology

5 credits

Offered By Announcement Only

Course discusses the nature of microbial agents of infectious disease as well as relationship of virulence to host resistance and fundamental immunologic concepts. Microbial physiology and genetics, the structure, design, and mechanism of action on antimicrobials are also.

PREREQUISITE: PERMISSION OF DEPARTMENT CHAIRMAN.

MIC523 Mechanisms of Microbial Virulence

3 credits

Spring Semester

This course will focus on the mechanisms employed by bacterial and viral pathogens to produce disease in animals and humans. The course is divided into two 3 week modules. The first module will cover bacterial pathogens with an emphasis on the bacteria-host cell interaction. Specific topics will include: bacterial attachment and invasion of eukaryotic cells, virulence gene regulation, secretion of virulence factors, bacterial toxins and obligate intracellular bacterial pathogens. The second module will cover viruses and human viral diseases with an emphasis on viral replication, gene expression, virus-host cell interactions and viral oncology. Classes will consist of a mixture of lectures and discussions of recent or classic papers. There will be 2 exams.

MIC605 Faculty Research and Discussions

1 credits

Fall Semester

Forum for the discussion of the current research projects and interests of the faculty. This course provides students with the opportunity to exchange ideas about important scientific questions and the technologies being applied to experimentally address the hypotheses being tested.

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MICROBIOLOGY & IMMUNOLOGY

MIC611 Accelerated Basic Science Medical Curriculum

1-18 credits

Fall & Spring Semester

Beginning in the latter part of June each year, extending to the middle of February of the ensuing year, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. single grade will be entered on the graduate transcript for this course.

PREREQUISITE: ADMISSION TO THE COMBINED M.D./PH.D. PROGRAM.

MIC616 Advanced Molecular Biology

3 credits

Fall Semester

The molecular basis of cellular function and regulation in both procaryotic and eucaryotic systems. The molecular genetics and biochemistry of the genetic material and its utilization during replication, transcription, translation, cellular growth, division, and differentiation. Recombinant DNA technology and molecular genetics are discussed. This course is designed for graduate students in biological sciences. A good background in biology or biochemistry is recommended.

MIC626 Laboratory Experimentation

4 credits

Fall Semester

One or two laboratory training sessions of 6-12 weeks each. Each student rotates through faculty research laboratories in the areas of immunology, molecular biology, and microbiology, (bacteriology, virology, parasitology) where they receive "hands on" experience by participating in ongoing research projects.

PREREQUISITE: MIC 501 AND PERMISSION OF CHAIRMAN OF GRADUATE STUDIES COMMITTEE.

MIC627 Laboratory Experimentation

6 credits

Spring Semester

Two or three laboratory training sessions of 6-12 weeks each. Each student rotates through faculty research laboratories in the areas of immunology, molecular biology and microbiology, (bacteriology, virology, parasitology) where they receive "hands on" experience by participating in ongoing research projects.

PREREQUISITE: MIC 501 AND PERMISSION OF CHAIRMAN OF GRADUATE STUDIES COMMITTEE.

MIC628 Principles of Immunology

3 credits

Spring Semester

This team-taught course will present immunological concepts and reasoning in immunological research. The course is divided into 7 weekly modules. Each module has a common theme and consists of 3 lectures on immunological concepts and one session where students present and discuss a research paper related to the theme of each module. The paper discussion session will include use of disease models as a portal to understand the function of immune system in health and disease. The module topics are (a) lymphoid cell development, (b) antigen recognition, (3) initiation of immune responses, (4) T lymphocyte effector development and function, (5) T cell immunity versus tolerance, (6) B cell immunity, and (7) innate immunity. There will be one exam following the first 4 modules and the second exam after the remaining 3 modules.

MIC631 Special Work

1- 5 credits

Fall Semester

Special work, lecture, laboratory or a combination of these, as determined by advisor in accord with student's individual interest. Course is offered only on demand.

PREREQUISITE: PERMISSION OF ADVISOR AND DEPARTMENT CHAIRMAN.

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MIC651 Advanced Molecular Immunology

3 credits

Fall Semester

The molecular mechanisms for generation of antigen specific receptor diversity and the specific gene activation during lymphocyte differentiation.

PREREQUISITE: MIC 628.

MIC655 Infectious Agents and the Immune System

3 credits

Spring Semester

This course is intended to explore, at an advanced level, the dynamic equilibrium that exists between microbial pathogens and host immune systems with emphasis on factors that influence progression to disease or sterilizing immunity. Mechanisms employed by the host and pathogen to shift that equilibrium in their favor will be discussed taking into account interactions at the cell system, cellular, and sub-cellular levels. To facilitate interaction between the two fields, both an immunological and a microbial/viral faculty member will be present at all classes.

PREREQUISITE: MIC 523 OR PERMISSION OF INSTRUCTOR.

MIC661 Advanced Topics in Molecular Biology of Animal Viruses

2 credits

Offered By Announcement Only

This course is organized around four major themes of virological studies: (i) viral genome transcription, replication, and virus assembly; (ii) viral pathogenesis; (iii) virus cell interactions; and (iv) antiviral strategies. Most recent research developments in these areas are covered through lectures by participating faculty members as well as paper presentations by students.

PREREQUISITE: MIC 523 OR PERMISSION ON INSTRUCTOR.

MIC680 Research Ethics

0 credit

Fall Semester

The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Department or Program. This is a six-hour course and is given in two sessions of three hours each.

PREREQUISITE: PERMISSION OF THE GRADUATE ADVISOR.

MIC699 Advanced Topics

1- 3 credits

Offered By Announcement Only

Subject matter offerings based upon student demand and availability of faculty.

Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title "Advanced Topics".

PREREQUISITE: PERMISSION FROM INSTRUCTOR.

MIC710 Master's Thesis

1- 6 credits

Offered By Announcement Only

The student working on his/her master's thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MIC720 Research in Residence

0 credit

Offered By Announcement Only

Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in MIC 710 (usually six credits). Credit not granted. May be regarded as full time residence.

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MICROBIOLOGY & IMMUNOLOGY

MIC730 Doctoral Dissertation

1-12 credits *Fall & Spring Semester & First & Second Summer Session*
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of MIC 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

MIC740 Doctoral Dissertation - Post Candidacy

1-12 credits *Fall Semester*

MIC750 Research in Residence

0 credit *Fall & Spring Semester & First & Second Summer Session*
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

MOLECULAR CELL & DEVELOPMENTAL BIOLOGY

MDB601 Seminar

1- 2 credits *Fall & Spring Semester & First & Second Summer Session*
For graduate students in Cell Biology and Anatomy, Graduate Program in Molecular Cell and Developmental Biology. Departmental Faculty and graduate student research seminars.
PREREQUISITE: PERMISSION OF DEPARTMENT CHAIRMAN.

MDB606 Computer Applications in Research

2 credits *Offered By Announcement Only*
Microcomputer programs beneficial to a wide variety of biomedical research applications.
PREREQUISITE: PERMISSION OF INSTRUCTOR AND DEPARTMENT CHAIRMAN.

MDB610 Readings in Cell Biology

1- 6 credits *Fall & Spring Semester*
Current and classical research papers in cell, developmental, and molecular biology. Critical evaluation of papers and the methodologies used is included.
PREREQUISITE: PERMISSION OF COURSE SUPERVISOR AND DEPARTMENT CHAIRMAN.

MDB611 Accelerated Basic Science Medical Curriculum

1-18 credits *Fall & Spring Semester*
Beginning in the latter part of June each year, extending to the middle of February of the ensuing year, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. A single grade will be entered on the graduate transcript for this course.
PREREQUISITE: ADMISSION TO THE COMBINED M.D./PH.D. PROGRAM

MDB613 Topics in Cell Biology

1- 6 credits *Fall & Spring Semester & First & Second Summer Session*
Formal seminar course in which each student presents a lecture relating to a specific theme. Topic areas include cell, developmental, and molecular biology with the subject changing each term.
PREREQUISITE: PERMISSION OF COURSE SUPERVISOR AND DEPARTMENT CHAIRMAN.

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MDB617 Advanced Techniques in Molecular Biology

2- 3 credits

Fall Semester

Method/techniques type course.

PREREQUISITE: BMB 506 OR EQUIVALENT, OR PERMISSION OF INSTRUCTOR.

MDB618 Cell Membranes

2 credits

Offered By Announcement Only

Cell membrane structure and function including recent developments in intracellular targeting of membrane vesicles, mechanisms of exocytosis, receptor-mediated endocytosis, and regulation of intercellular recognition by cell surface molecules.

PREREQUISITE: PERMISSION OF INSTRUCTOR AND DEPARTMENT CHAIRMAN.

MDB620 Introduction to Research in Cell Biology

1- 6 credits

Fall & Spring Semester

Direct laboratory experience as determined by the Departmental Graduate Committee.

PREREQUISITE: PERMISSION OF COORDINATOR AND DEPARTMENT CHAIRMAN.

MDB645 Research Problems in Biochemistry, Cell and Molecular Biology

2- 3 credits

Fall & Spring Semester & First & Second Summer Session

Laboratory research problems in various areas of biochemistry, cell biology, and molecular biology. A literature search, experimental design, data gathering, and evaluation of results is included. Course is the mechanism by which graduate laboratory rotations are done in preparation for selection of Ph.D. mentor.

PREREQUISITE: BMB 506 OR EQUIVALENT OR PERMISSION OF INSTRUCTOR.

MDB651 Advanced Molecular Cell Biology

3 credits

Spring Semester

Structure, function, biogenesis of cellular organelles, and the cytoskeleton including its regulation and dynamic interactions are discussed.

PREREQUISITE: BIL 255 AND BMB 401 OR 506 AND PERMISSION OF DEPARTMENT CHAIRMAN.

MDB652 Developmental Biology

3 credits

Fall Semester

Continuation of MDB 651. Early developmental events, including fertilization, changes in transcriptional and translational activity, cleavage and gastrulation, nuclear-cytoplasmic interactions, and intercellular recognition. Events are treated at both the molecular and cellular levels, including changes in gene expression.

PREREQUISITE: SUCCESSFUL COMPLETION OF MDB 651 AND PERMISSION OF DEPARTMENT CHAIRMAN.

MDB653 Histology

1 credits

Fall Semester

This course will offer the student a virtual slide collection of histology with interactive lectures to support image-based learning. The course covers basic tissues, organs, and systems (vascular; heart; pancreas; eyes; brain; spinal cord; liver; lung; mouse embryo; GI track). The course will meet once a week for one hour.

PREREQUISITE: 2ND. YEAR GRADUATE STUDENT, IBS

MDB654 Methods in Cell Biology

2 credits

Offered By Announcement Only

Introduction to the basic biochemical and cytochemical laboratory techniques used in cell biological and biomedical research.

PREREQUISITE: BASIC BIOLOGY AND CHEMISTRY AND PERMISSION OF INSTRUCTOR AND DEPARTMENT CHAIRMAN.

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MOLECULAR CELL & DEVELOPMENTAL BIOLOGY

MDB663 Development and Regeneration of the Nervous System

3 credits

Fall Semester

Development of the nervous system in all its aspects: origins of neurons and glia; nerve cell differentiation; cellular interactions during neurogenesis; formation of synaptic connections and neuronal circuits; development of nervous functions and ontogeny of behavior; mechanisms of repair and reorganization in the nervous systems; and theories of neuronal plasticity.

PREREQUISITE: PERMISSION OF COURSE COORDINATOR AND DEPARTMENT CHAIRMAN.

MDB665 Tumor Biology

2- 3 credits

Fall Semester

Tumor Biology is intended to provide an overview and update of the most important topics in modern molecular and cellular aspects of cancer biology and research. The sessions are topical and include both lectures and discussions of current papers in the topic areas. A list of the topics is attached.

PREREQUISITE: NONE. REGISTRATION IS OPEN TO ANYONE ENROLLED IN A UM GRADUATE PROGRAM OR BY PERMISSION OF THE INSTRUCTORS.

MDB666 Advanced Microscopy and Image Analysis

2 credits

Fall Semester

This course will cover the acquisition, use and maintenance of advanced research microscopes including data analysis using the equipment and software already available in the instructors' labs. Topics to be covered include types, function and choice of optical and electron microscopes; sample preparation and synthesis of fluorescent and particle-labeled probes; transmitted light microscopy; fluorescent microscopy; confocal microscopy; real time cell and particle tracking; digital image analysis and quantitative fluorescence analysis; transmission and scanning electron microscopy, and digital image data interpretation. The course will meet twice a week for one hour, with one lecture and one hands-on laboratory session per week. Class registration is limited to 4-6 students.

PREREQUISITE: IBS 601 AND 601, AND SOME LABORATORY EXPERIENCE IN CELL BIOLOGY AND BASIC MICROSCOPY. ADMISSION IS WITH PERMISSION OF THE INSTRUCTORS.

MDB680 Research Ethics

0 credit

Fall Semester

The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Department or Program. This is a six-hour course and will be given in two sessions of three hours each.

PREREQUISITE: PERMISSION OF THE GRADUATE ADVISOR.

MDB710 Master's Thesis

1- 6 credits

Offered By Announcement Only

The student working on his/her master's thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MDB720 Research in Residence

0 credit

Offered By Announcement Only

Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in MDB 710 (usually six credits). Credit not granted. May be regarded as full time residence.

University of Miami Bulletin, 2009-2010
Graduate Course Listing
SCHOOL OF MEDICINE
MOLECULAR CELL & DEVELOPMENTAL BIOLOGY

MDB730 Doctoral Dissertation

1-12 credits

Fall & Spring Semester & First & Second Summer Session

Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of MDB 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

MDB740 Doctoral Dissertation- Post Candidacy

1-12 credits

Fall Semester

MDB750 Research in Residence

0 credit

Fall & Spring Semester & First & Second Summer Session

Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as has determined by the Dean of the Graduate School.

MOLECULAR & CELLULAR PHARMACOLOGY

MCP601 Seminar

1 credits

Fall & Spring Semester

Review of the literature and discussion of specific topics. Course may be repeated for a total of four credits.

PREREQUISITE: CONSENT OF INSTRUCTOR.

MCP604 Mechanisms of Drug Action

2 credits

Fall Semester

Mechanisms underlying the therapeutical and pharmacodynamic properties of pharmacological agents. Emphasis is placed on cellular and molecular aspects and the quantitative factors governing equilibration within multicompartiment systems and drug control of nervous and muscular function in relation to therapeutic action.

PREREQUISITE: CONSENT OF INSTRUCTOR.

MCP605 Pharmacology and Therapeutics

4 credits

Offered By Announcement Only

Course places emphasis on the principles of action of drugs having therapeutic value in medicine. The student is introduced to the scientific rationale of drug administration. Topics include central nervous system pharmacology, peripheral and autonomic nervous system, cardiovascular pharmacology, control of electrolyte and metabolite balance, chemotherapy, mechanisms of toxicity, and pharmacogenetics.

PREREQUISITE: MCP 604.

MCP607 Toxicology, Its Principles and Environmental Application

2 credits

Offered By Announcement Only

The principles of toxicology, toxicity, and carcinogenic testing procedures, and their interpretation. Relevance to man is stressed. Application of these principles to environmental problems with the heavy metals, pesticides, poisonous plants, animal toxins, environmental carcinogens, radioisotopes, the abuse of drugs, alcohol, and mycotoxins is covered in detail.

PREREQUISITE: CONSENT OF INSTRUCTOR.

University of Miami Bulletin, 2009-2010
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SCHOOL OF MEDICINE
MOLECULAR & CELLULAR PHARMACOLOGY

MCP608 Drug Metabolism

2 credits

Offered By Announcement Only

Factors affecting the absorption, metabolic rate, excretion of drugs, chemicals, and toxic substances.

PREREQUISITE: CONSENT OF INSTRUCTOR.

MCP610 Membrane Biophysics Seminar

1 credits

Offered By Announcement Only

The student may be required to submit a term paper.

PREREQUISITE: PERMISSION OF DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

MCP611 Accelerated Basic Science Medical Curriculum

1-18 credits

Fall & Spring Semester

Beginning in the latter part of June each year, extending to the middle of February of the ensuing year, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. A single grade will be entered on the graduate transcript for this course.

PREREQUISITE: ADMISSION TO THE COMBINED M.D./PH.D. PROGRAM

MCP612 Pathobiology I

3 credits

Offered By Announcement Only

Required for Physician Scientist Program students; open to graduate students. Two, three-hour sessions (first hour at multi-headed scope followed by two hours of laboratory) per week for eight weeks in the fall semester (September and October; days and times to be arranged). The purpose of the pathobiology course is to provide graduate students with knowledge of basic principles for understanding normal histomorphology and pathologic lesions associated with experimentally induced and naturally occurring diseases. The keystone of this innovative, short course is the small group's socratic study of a series of autopsy cases--each represented by a set of microscopic slides. The cases are preselected to allow the students to focus on specific, basic concepts early and organ-system lesions later. Students spend the first hour of the biweekly sessions at a multi-headed scope creating a profile of the patient-- including age, sex, race, and chief disease. At the end of the first hour deliberations, students receive feedback regarding their conclusions by being provided with a summary of the patient's history and autopsy findings. Students review relevant gross specimens and kodachromes during the biweekly two-hour laboratory sessions.

PREREQUISITE: ADMISSION TO THE PHYSICIAN SCIENTIST PROGRAM OR THE GRADUATE PROGRAM OF ONE THE FIVE BASIC SCIENCE DEPARTMENTS LOCATED AT THE SCHOOL OF MEDICINE.

MCP620 Design and Evaluation of Drug Studies

1 credits

Offered By Announcement Only

Practical experience in the design and evaluation of drug studies making use of data from actual field trials conducted in the clinical facilities of the department.

Drug evaluation studies in the literature are examined.

PREREQUISITE: MCP 604, 605 AND PERMISSION OF DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

MCP621 Clinical Pharmacology

2 credits

Offered By Announcement Only

The application of pharmacologic principles of clinical situations. Basic concepts such as drug uptake, distribution, mechanics of action, metabolism, and elimination are discussed as they apply to proper therapeutic use of drugs. Clinical cardiovascular pharmacology is covered in particular depth.

PREREQUISITE: MCP 604, 605 AND PERMISSION OF DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

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SCHOOL OF MEDICINE
MOLECULAR & CELLULAR PHARMACOLOGY

MCP624 Research Opportunities in Human Disease

1 credits

Offered By Announcement Only

The course presents human diseases from a research perspective, with each disease forming the basis for four lecture/discussion sections (2 hrs./session; 1 session/wk.). Each disease is discussed with respect to: 1) Clinical presentation, epidemiology, and therapeutics, 2) Cellular and Molecular mechanisms, 3) Current treatment strategies, and 4) Prospects, challenges, and opportunities for research efforts.

MCP631 Special Topics

1- 6 credits

Spring Semester

Directed readings on subjects not ordinarily treated in depth in specific courses. Course may also consist of special laboratory problems.

MCP632 Cardiovascular Pharmacology

2- 3 credits

Spring Semester

A course for advanced students covering the mechanism of action of drugs on the cardiovascular system.

PREREQUISITE: CONSENT OF INSTRUCTOR.

MCP635 Biophysical Chemistry

2 credits

Offered By Announcement Only

This course teaches the physico-chemical principles basic to life science and complements MCP 641, "Principles in Membrane Physiology and Biophysics". The course is designed so that a student lacking previous exposure to physical chemistry can take the two courses concurrently. Topics include equilibrium and thermodynamics, mathematical descriptions of multiple equilibrium, electrolyte theory, rate theory, mathematical descriptions of the rates of enzymatic reactions, diffusion and permeation, mechanistic aspects of ion transport, and the application of fluorescent probe methods to the study of membrane phenomena. The courses uses a problem-solving approach.

PREREQUISITE: CONSENT OF INSTRUCTOR.

MCP641 Principles of Membrane Physiology and Biophysics I

2 credits

Offered By Announcement Only

Course emphasizes chemical and physical structure of membranes, model systems, permeability and transport, membrane potential, ionic channels, excitability in nerve and muscle, ionophores, active transport, and membrane receptors. Identical to Physiology and Biophysics 641.

PREREQUISITE: CHM 365; BMB 506; AND PERMISSION OF DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

MCP642 Principles of Membrane Physiology and Biophysics II

2 credits

Offered By Announcement Only

Course discusses osmosis and cell volume, tracer analysis of permeability and compartmentation, theory of channels and carriers, and cable properties. The Hodgkin-Huxley formalism; Na, K, and Ca ion channels; regulation of cellular Na and Ca activities; single-channel analysis; chemical synapses; membrane receptors; cell junctions; excitation; and E-C coupling in muscle are also covered. Identical with Physiology and Biophysics 642.

PREREQUISITE: MCP 641.

MCP643 Methods in Membrane Research

3 credits

Fall Semester

Introduction to research and laboratory techniques. Molecular and membrane pharmacology, radio-tracers, cardiovascular, and neuropharmacology are covered.

PREREQUISITE: PERMISSION OF DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

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SCHOOL OF MEDICINE
MOLECULAR & CELLULAR PHARMACOLOGY

MCP644 Methods in Membrane Research

3 credits

Spring Semester

Introduction to research and laboratory techniques. Molecular and membrane pharmacology, radio-tracers, cardiovascular, and neuropharmacology are covered.

PREREQUISITE: PERMISSION OF DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

MCP645 Topics in Membrane Physiology and Biophysics

3 credits

Offered By Announcement Only

In-depth examination of selected topics introduced in MCP 641, 642. A term paper is required.

PREREQUISITE: MCP 641, AND PERMISSION OF DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

MCP651 Cell Biology I

2 credits

Offered By Announcement Only

The dynamics of eukaryotic cells examined from the standpoint of structure and function, regulation of function and interactions of the subcellular organelles.

Identical to PHS 651.

MCP652 Cell Signaling

3 credits

Fall Semester

Recent advances in the molecular biology of cellular activation by hormones and neurotransmitters. Hormone-regulated signal transduction mechanisms and the manner in which they interact to control cellular responses as they pertain to the pharmacology of drug and hormone action.

PREREQUISITE: PERMISSION OF THE DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

MCP668 Neuropharmacology

2- 3 credits

Fall Semester

A course for advanced students covering the mechanism of action of drugs on neural processes, including action potentials, neurotransmission (storage, release, reception, and metabolism of transmitters), and central nervous system activity.

PREREQUISITE: CONSENT OF INSTRUCTOR.

MCP680 Research Ethics

0 credit

Fall Semester

The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Department or Program. This is a six-hour course and will be given in two sessions of three hours each.

PREREQUISITE: PERMISSION OF THE GRADUATE ADVISOR.

MCP710 Master's Thesis

1- 6 credits

Fall & Spring Semester & First & Second Summer Session

The student working on his/her master's thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MCP720 Research in Residence

0 credit

Fall & Spring Semester & First & Second Summer Session

Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in MCP 710 (usually six credits). Credit not granted. May be regarded as full time residence.

University of Miami Bulletin, 2009-2010
Graduate Course Listing
SCHOOL OF MEDICINE
MOLECULAR & CELLULAR PHARMACOLOGY

MCP730 Doctoral Dissertation

1-12 credits *Fall & Spring Semester & First & Second Summer Session*
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of MCP 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

MCP740 Doctoral Dissertation- Post Candidacy

1-12 credits *Fall Semester*

MCP750 Research in Residence

0 credit *Fall & Spring Semester & First & Second Summer Session*
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

NEUROSCIENCE

NEU600 Seminar in Neuroscience

1 credits *Fall & Spring Semester*
Students are required to present a short talk on a research area of interest. All students in the Neuroscience Program are required to register for this seminar, which also includes journal presentations. For other registrants, permission of the Departmental Graduate Studies Committee is required.

NEU601 Introduction to Neuroscience Techniques

1 credits *Fall & Spring Semester*
Hands-on exercises in research laboratories introduce first-year Neuroscience students to methodologies commonly used in the Neurosciences. The course includes selected techniques from electrophysiology, immunocytochemistry, fluorescence microscopy, recombinant DNA, protein immunoblotting, and functional imaging. Students are required to complete a lab notebook of each exercise. There is also a segment on database searches.

NEU609 Research

1- 5 credits *Fall & Spring Semester & First & Second Summer Session*
Students work with individual members of the program faculty on research problems. Provides orientation as to the areas of research in the field and the techniques used.
PREREQUISITE: PERMISSION OF THE PROGRAM STEERING COMMITTEE OR ITS CHAIRMAN.

NEU611 Accelerated Basic Science Medical Curriculum

1-18 credits *Fall & Spring Semester*
From late June to mid-February, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. A single grade will be entered on the graduate transcript for this course.
PREREQUISITE: ADMISSION TO THE M.D./PH.D. DEGREE PROGRAM.

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SCHOOL OF MEDICINE
NEUROSCIENCE

NEU631 Advanced Topics in Neuroscience

1- 5 credits *Fall & Spring Semester & First & Second Summer Session*
Special work, lecture, laboratory, reading, seminar, or a combination of these as determined by advisor in accordance with student's interest.
PREREQUISITE: PERMISSION OF THE PROGRAM STEERING COMMITTEE.

NEU641 Statistics in Neuroscience

1 credits *Offered By Announcement Only*
This course will provide basic information necessary to appropriately design experiments and analyze and interpret data in the behavioral and biological sciences. A lecture/discussion format will be used. The course will cover research methodology, basic statistical concepts, and an in-depth discussion of descriptive (measures of central tendency, variability and correlation) and inferential statistics (both parametric and non-parametric tests of significance). In addition, various statistical computer programs will be reviewed. Specific topics include: 1. Statistical terminology; 2. Measurement scales; 3. Plotting your data for initial interpretation; 4. Measures of central tendency and variability; 5. Type I and Type II errors and controlling power; 6. Which statistical test do I use for my data? 7. What can I conclude from my data and does it mean anything? Students will be evaluated based on their understanding of statistical design and data interpretation.

NEU661 Neuroscience I

2 credits *Spring Semester*
An introduction to neuronal physiology, including synaptic transmission and integration, sensory neurobiology, and cellular learning and memory. 2 credits.
PREREQUISITE: PERMISSION OF INSTRUCTOR.

NEU662 Neuroscience II

3 credits *Fall Semester*
This course is designed to teach Neuroscience to individuals engaged in basic neuroscience research. The course provides comprehensive coverage of Neuroscience. Neuroscience II covers Network Neurobiology and Higher Nervous System Function. The course concentrates on the experimental basis for our understanding of nervous system function. Course utilizes both didactic lectures and discussions of current research literature.
PREREQUISITE: UNDERGRADUATES REQUIRE PERMISSION OF INSTRUCTOR.

NEU663 Developmental Neurobiology

2 credits *Spring Semester*
This course will explore nervous system development from early neural induction and neurogenesis to the construction of neural circuits. Cellular and molecular mechanisms of neural migration, neurite growth and guidance, and synaptogenesis will be covered.
PREREQUISITE: PERMISSION OF INSTRUCTOR.

NEU680 Research Ethics

0 credit *Fall Semester*
The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Program. This is a six-hour course and will be given in two sessions of three hours each.
PREREQUISITE: PERMISSION OF THE GRADUATE ADVISOR OR PROGRAM DIRECTOR.

University of Miami Bulletin, 2009-2010
Graduate Course Listing
SCHOOL OF MEDICINE
NEUROSCIENCE

NEU697 Neuroanatomy

3 credits

Fall Semester

This course is designed to teach functional neuroanatomy to individuals engaged in basic neuroscience research. An important feature of each class period is a laboratory segment in which the students perform dissections of human brains and sheep brains, examine models of the brain, and interact with laser videodiscs and Hypercard-based Macintosh programs which contain pictures, text, clinical examples, and 3-dimensional rotations of the nervous system.

PREREQUISITE: UNDERGRADUATES REQUIRE PERMISSION OF INSTRUCTOR.

NEU710 Master's Thesis

1-12 credits

Offered By Announcement Only

NEU720 Research in Residence

0 credit

Fall & Spring Semester & First & Second Summer Session

Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in Master's Thesis (usually six credits). Credit not granted. May be regarded as full time residence.

NEU730 Doctoral Dissertation

1-12 credits

Offered By Announcement Only

Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of NEU 730 may be taken in regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

NEU740 Doctoral Dissertation- Post Candidacy

1-12 credits

Fall Semester

PREREQUISITE: NONE

NEU750 Research in Residence

0 credit

Fall & Spring Semester & First & Second Summer Session

Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

PHYSICAL THERAPY

PTS501 Therapeutic Rehabilitation of Athletic Injuries

2 credits

Spring Semester

Basic principles of rehabilitation of athletic injuries including, but not limited to, range of motion, strengthening, edema and pain control, balance, proprioception, endurance, and skill acquisition.

PREREQUISITE: FOR ATHLETIC TRAINING MAJORS ONLY, OR WITH PERMISSION OF THE INSTRUCTOR.

COREQUISITE: PTS 502.

PTS502 Therapeutic Rehabilitation of Athletic Injuries Clinical Laboratory

1 credits

Spring Semester

Application of basic principles of rehabilitation of athletic injuries including, but not limited to range of motion, strengthening, edema and pain control, balance, proprioception, endurance, and skill acquisition.

PREREQUISITE: FOR ATHLETIC TRAINING MAJORS ONLY, OR WITH PERMISSION OF THE INSTRUCTOR.

COREQUISITE: PTS 501.

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SCHOOL OF MEDICINE
PHYSICAL THERAPY

PTS503 Therapeutic Modalities in Athletic Training

2 credits

Fall Semester

Basic principles of theory and application of various modalities encountered in athletic training practice, including but not limited to: infrared modalities, ultrasound, electrical stimulation, mechanical modalities, and hydrotherapy.

PREREQUISITE: FOR ATHLETIC TRAINING MAJORS ONLY, OR WITH PERMISSION OF THE INSTRUCTOR.

COREQUISITE: PTS 504.

PTS504 Therapeutic Modalities in Athletic Training Clinical Laboratory

1 credits

Fall Semester

Basic principles of application of various modalities encountered in athletic training practice, including but not limited to: infrared modalities, ultrasound, electrical stimulation, mechanical modalities, and hydrotherapy.

PREREQUISITE: FOR ATHLETIC TRAINING MAJORS ONLY, OR WITH PERMISSION OF THE INSTRUCTOR.

COREQUISITE: PTS 503.

PTS505 Physical Therapy Private Practice Management

1 credits

Fall Semester

Course focuses on establishing a private physical therapy practice, including initial development through marketing and management.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY OR WITH PERMISSION OF THE INSTRUCTOR.

PTS506 Issues in Women's Health: Gynecology

1 credits

First & Second Summer Session

Introduction to physical therapy practice for evaluation and treatment of pelvic floor dysfunction.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY OR WITH PERMISSION OF THE INSTRUCTOR.

PTS507 Issues in Women's Health: Obstetrics, Osteoporosis and Breast Health

1 credits

Fall Semester

Introduction to physical therapy practice for evaluation and treatment of problems related to pregnancy, osteoporosis, and other disorders specific to women.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY OR WITH PERMISSION OF THE INSTRUCTOR.

PTS508 Rape Aggression Defense for Women (RAD)

1 credits

Fall Semester

A comprehensive self defense course for women including awareness, prevention, risk reduction and avoidance, and the basics of hands-on defense training.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY OR WITH PERMISSION OF THE INSTRUCTOR.

PTS509 Exercise for Persons with Spinal Cord Injuries

1 credits

First & Second Summer Session

Course provides a review of etiology and pathology of spinal cord injury as well as current methods of exercise and electrical stimulation systems and their physiological effects on the individual.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY OR WITH PERMISSION OF THE INSTRUCTOR.

PTS510 Balance for the Neurologic Patient

1 credits

Offered By Announcement Only

Introduction to balance evaluation and treatment concepts for patients with neurological deficits.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY OR WITH PERMISSION OF THE INSTRUCTOR.

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SCHOOL OF MEDICINE
PHYSICAL THERAPY

PTS511 Positioning as a Pediatric Therapeutic Modality

1 credits

Offered By Announcement Only

Introduction to adaptive seating and positioning in pediatric physical therapy, neurophysiological, biomechanical, and functional rationale.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY OR WITH PERMISSION OF THE INSTRUCTOR.

PTS512 Sports Physical Therapy

1 credits

Spring Semester

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY OR WITH PERMISSION OF THE INSTRUCTOR.

PTS513 Clinical Instructor Training

1 credits

Spring Semester

Introduction to the roles and responsibilities of being a clinical instructor to physical therapy students. Course material is adapted from the Clinical Instructor Workshop of the Florida Consortium of Clinical Educators.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY OR WITH PERMISSION OF THE INSTRUCTOR.

PTS514 Certified Strength and Conditioning Specialist Preparation (NSCA)

1 credits

First Summer Session

Evaluation and exercise planning of athletes to help them achieve their maximum physical performance without incurring injury. Case studies, a problem-solving approach, and integration of previously learned material are emphasized. Classroom instruction, exercise performance, video analysis, and case studies.

PREREQUISITE: ENROLLMENT IN THE DPT PROGRAM

PTS515 Taping for the Athletic Population

1 credits

Offered By Announcement Only

This seminar course is designed to introduce the participant to the concepts of taping for various musculoskeletal pathologies commonly seen in the athletic population. Athletic taping and kinesiotaping principles and uses in rehabilitation will be introduced. A lab component will allow participants to practice the various taping techniques demonstrated.

PREREQUISITE: FOR PHYSICAL THERAPY GRADUATE STUDENTS ONLY

PTS516 Clinical Research I

3 credits

Fall Semester

Principles, concepts, and basic skills required to conduct clinical research in physical therapy. Topics include research design, sampling, bias, reliability and validity, questionnaire design, statistical computing, conceptual review of literature, and the preparation of a research proposal.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS517 Abdominal Anatomy

1 credits

First & Second Summer Session

Course analyzes abdominal anatomy emphasizing structure and function. Cadaver dissection is included. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY OR WITH PERMISSION OF THE INSTRUCTOR.

PTS519 Pelvic Anatomy

1 credits

First & Second Summer Session

Course analyzes the anatomy of the human pelvic area. Cadaver dissection is included.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY OR WITH PERMISSION OF THE INSTRUCTOR.

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PHYSICAL THERAPY

PTS523 Myofascial Release

1 credits

Fall Semester

Introduction to Myofascial Release technique in rehabilitation.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY, WITH PERMISSION OF INSTRUCTOR.

PTS526 Introduction to Pilates Rehabilitation I

1 credits

First & Second Summer Session

Course provides historical development, and evidence-based approach to Pilates rehabilitation.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY; OTHERS WITH PERMISSION OF INSTRUCTOR.

PTS527 Introduction to Pilates Rehabilitation II

1 credits

First & Second Summer Session

Introduction to the Pilates Environment.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY; OTHERS WITH PERMISSION OF INSTRUCTOR.

PTS530 Foundations of Physical Therapy

3 credits

Second Summer Session

Historical development, philosophical foundations and contemporary practice of physical therapist as educator, consultant, administrator, and model of healthy behaviors. Health as indicated by global fitness measures will be demonstrated and experienced. Medical terminology mastered.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS531 Gross Anatomy for Physical Therapy

3 credits

First Summer Session

Gross anatomy with emphasis on the musculoskeletal systems and a survey of other systems that are relevant to physical therapy practice.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS532 Gross Anatomy for Physical Therapy

3 credits

Spring Semester

Gross Anatomy with emphasis on the musculoskeletal systems and a survey of other systems that are relevant to physical therapy practice.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS533 Communication in Physical Therapy Practice

2 credits

First Summer Session

Course provides an analysis of communication skills in physical therapy clinical practice. Emphasis is placed on instruction of patients and their families, supportive staff, and health care team members. In-depth examination of patient-therapist interactions is included.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS540 Neuroscience I

3 credits

Fall Semester

The human central nervous system with emphasis on structure-function relationships, and clinical applications. The brain, spinal cord, cranial nerves, tracts, and nuclei of major systems. Central nervous systems lesions and their clinical significance are discussed. Lecture and human dissection are included.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

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SCHOOL OF MEDICINE
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PTS541 Neuroscience II

3 credits

First & Second Summer Session

The central, peripheral, and autonomic nervous systems and their physiological responses to environmental stimuli. Normal systems are contrasted with abnormal systems. The clinical significance of altered neurophysiological states is discussed.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS542 Electrotherapy

3 credits

First & Second Summer Session

Course provides an evaluation of nerve and skeletal muscle by classical electrical means. The therapeutic application of selected modalities is discussed.

PREREQUISITE: PHYSICAL THERAPY MAJORS ONLY.

PTS543 Medical Pathology Seminar I

1 credits

Fall Semester

Lectures and seminar discussion of pathological conditions with particular emphasis on musculoskeletal disorders.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS544 Medical Pathology Seminar II

1 credits

Spring Semester

Lectures and seminar discussion of pathological conditions with particular emphasis on neuromuscular disorders.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS545 Medical Pathology Seminar III

1 credits

First & Second Summer Session

Lectures and seminar discussion of pathology conditions with particular emphasis on integumentary disorders.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS546 Medical Pathology Seminar IV

1 credits

Fall Semester

Lectures and seminar discussion of pathological conditions with particular emphasis on cardiorespiratory disorders.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS550 Pharmacology

2 credits

Fall Semester

Basic principles of pharmacology and pharmacotherapeutics. Contemporary drug therapies and their effects on patients undergoing rehabilitation are discussed.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS570 Clinical Skills in Physical Therapy

3 credits

Spring Semester

Decision making, documentation and beginning treatment skills in functional mobility and basic exercise and massage. Indications and contraindications of massage, basic active, active assisted, active resisted range of motion and isometric exercises are learned. First aid course is also given.

PREREQUISITE: PHYSICAL THERAPY MAJORS ONLY.

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Graduate Course Listing
SCHOOL OF MEDICINE
PHYSICAL THERAPY

PTS571 Therapeutic Physiology

2 credits

Fall Semester

Physiological effects of exercise and training for the healthy and diseased individual. The use of exercise for joint and muscle mobility, muscle strength, and cardiopulmonary function is included.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS572 Clinical Kinesiology and Biomechanics

4 credits

Fall Semester

A study of musculoskeletal structure and function, physiological and biomechanical factor, and principles underlying the kinematics and kinetic of normal and abnormal human motion.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS574 Clinical Evaluation

3 credits

Fall Semester

Basic evaluation skills for patients with various diseases and dysfunctions. Skills include clinical decision making, history taking, postural and functional assessment, surface palpation, manual muscle testing, and goniometric measurement. Classroom instruction and laboratory practice is included.

PREREQUISITE: PHYSICAL THERAPY MAJORS ONLY.

PTS575 Clinical Decision Making I

3 credits

Spring Semester

Introduction to physical therapy diagnosis, the disablement model, measurement of function screening, and the Physical Therapy Guide to Practice.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS595 Selected Topics in Physical Therapy

1- 3 credits

Fall & Spring Semester & First & Second Summer Session

Topics in contemporary physical therapy clinical practice with focus on specialty areas such as neonatal pulmonary care, balance/vestibular dysfunction, geriatrics, pediatrics, obstetrics, and gynecology.

PTS599 Independent Study in Physical Therapy

1- 3 credits

Fall & Spring Semester

Each course is designed to meet special interest demands of students.

PREREQUISITE: FOR PHYSICAL THERAPISTS; PERMISSION OF THE INSTRUCTOR.

PTS606 Neurological Evaluation

2 credits

Fall Semester

Comprehensive evaluation of the patient with neurological dysfunction. Emphasis is placed on decision making, differential diagnosis, selection, and interpretation of examination components.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS608 Human Gait and Locomotion

1 credits

Fall Semester

Principles of human gait and locomotion, including normal and pathological gait.

Analysis of deviations, causes and specific treatments to address movement dysfunctions.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY

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Graduate Course Listing
SCHOOL OF MEDICINE
PHYSICAL THERAPY

PTS610 Clinical Internship II

1 credits

Fall Semester

Supervised clinical education emphasizing clinical skills. Competence is expected in areas such as analysis of normal and abnormal human motion, exercise, and evaluation and treatment for cardiopulmonary dysfunctions.

PREREQUISITE: PHYSICAL THERAPY MAJORS ONLY.

PTS611 Clinical Internship

1 credits

Fall Semester

Supervised clinical education emphasizing clinical skills. Competence is expected in areas such as evaluation and treatment of extremity dysfunctions, wound care, and neuromuscular dysfunctions.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS614 Neurorehabilitation I

3 credits

Spring Semester

The theoretical basis and clinical application of the neurophysiological approaches to treatment. Principles of motor control dynamic systems, sensori-motor development, and integration are presented to include discussion and practice of methods of evaluation and intervention. Treatment principles, approaches, and techniques as advocated by the Bobaths, Rood, Brunstrom, Knott, and Voss are emphasized. An integrated and symptomatic approach, which reinforces the problem solving/differential diagnosis process involved in client care is utilized.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS615 Rehabilitation of the Complex Patient

3 credits

First & Second Summer Session

Rehabilitation of the complex patient, including spinal cord injury, traumatic brain injury, multi-system, and multi-organ disease.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS617 Clinical Research II

3 credits

Fall Semester

This course is a continuation of Clinical Research I that provides the student with continued guidance in the completion of the faculty led research project begun as part of Clinical Research I. A series of lectures also provide exposure to additional topics relevant to clinical research in Physical Therapy. Potential lecture topics include data analysis, design, error, philosophy of science, and research reporting.

PREREQUISITE: PTS 616; FOR PHYSICAL THERAPY MAJORS ONLY.

PTS618 Physical Therapy Administration

3 credits

First & Second Summer Session

Course discusses physical therapy services, departmental policies and procedures, and personnel management. Issues relevant to clinical practice and the physical therapy profession are emphasized. An administrative project.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS620 Biomechanical Basis of Human Movement

3 credits

Fall Semester

A study of the basic biomechanical principles underlying the kinetics and kinematics of normal and abnormal human motion as well as the measurement of human movement.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS.

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Graduate Course Listing
SCHOOL OF MEDICINE
PHYSICAL THERAPY

PTS621 Measurement of Impairment and Function in Human Movement

3 credits

Spring Semester

A study of measurement tools utilized in the analysis of normal and abnormal human motion.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS.

PTS622 Pathobiology of Human Function I

3 credits

Spring Semester

Pathophysiology of musculo-skeletal processes that impair human function including skeletal muscle; skin, tendons, ligaments, cartilage; bone; and cardiorespiratory.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR.

PTS624 Cardio-Respiratory Physical Therapy

3 credits

Spring Semester

The skills necessary for the evaluation and treatment of patients with various cardio-respiratory diseases and dysfunctions. Inpatient and outpatient cardiac and respiratory rehabilitation is included. Research on prevention of cardio-respiratory diseases and dysfunctions as it relates to evaluative, and therapeutic methods is also discussed. Course utilizes classroom instruction, individual investigation, laboratory practice, and clinical experience.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS626 Therapeutic Exercise

3 credits

Spring Semester

A holistic approach to the evaluation, treatment, and management of patients with various neuromuscular diseases and dysfunctions. Appropriate therapeutic exercises interrelated with modalities and self-help devices as well as individual investigation of respective neuromuscular diseases and dysfunctions. Classroom instruction and laboratory practice . are included.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS627 Prosthetics and Orthotics

3 credits

Spring Semester

A holistic approach to the evaluation and management of patients with amputations and spinal cord injuries. Appropriate therapeutic exercises interrelated with self-help appliances as well as individual investigation of respective amputation and spinal cord problems are emphasized. Classroom instruction and laboratory practice are included.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS628 Musculoskeletal Examination and Treatment I

3 credits

Spring Semester

In-depth examination of differential diagnosis of various extremity dysfunctions with principles of examining soft tissue, bony and post-surgical problems relevant to the shoulder, elbow, wrist/hand, hip, knee, ankle, and foot. Manual therapy/joint mobilizations for each joint will also be introduced.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS629 Management of the Spine

3 credits

First & Second Summer Session

The evaluation and treatment of various spinal dysfunctions. Review and investigation of the literature relevant to the sacro-iliac, lumbar, thoracic, cervical spines, and the head and neck. Clinical evaluation and treatment procedures is included. Course utilizes classroom instruction, laboratory practice, and clinical experience.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

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Graduate Course Listing
SCHOOL OF MEDICINE
PHYSICAL THERAPY

PTS630 Pediatric Physical Therapy

2 credits

Spring Semester

An overview of factors and issues related to examination and treatment of children by physical therapists.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS631 Geriatric Physical Therapy

2 credits

Spring Semester

An overview of factors and issues related to examination and treatment of older individuals by physical therapists.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS641 Seminar in Geriatric Rehabilitation

3 credits

Fall & Spring Semester

Geriatric rehabilitation offers many complex themes of inquiry. This seminar selects eight to ten topics to investigate such as: forms of long term care, communication with the confused and depressed, legal and ethical issues, sexuality, drugs and the elderly, nutrition, fitness and wellness, family issues, incontinence, falls, effects of exercise, motivation, and sociological and psychological aspects of aging.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR.

PTS644 Integrated Sports and Leisure

1- 3 credits

Spring Semester

Course promotes the integration of able-bodied students with the physically challenged by working together to learn common recreational activities. Sailing and camping activities are used as an educational tool for able-bodied students to learn the capabilities, physical resources, and assistance required by physically challenged individuals.

PTS645 Integumentary Disorders and Treatment

2 credits

Fall Semester

Basic and advanced principles regarding the integumentary system and related disorders, as well as principles of wound healing and wound care therapies.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS648 Musculoskeletal Examination and Treatment II

3 credits

Fall Semester

Advanced examination, evaluation, functional assessment and treatment of patients in selected specialty areas of musculoskeletal physical therapy, with emphasis on functional outcomes and evidence based treatment throughout the life span.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS650 Seminar in Obstetrics and Gynecological Physical Therapy

3 credits

Spring Semester

This course focuses on the expanding role of physical therapists in obstetrics and gynecology. Related research is critically analyzed.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR.

PTS655 Neuromuscular Basis of Movement

3 credits

Spring Semester

Concepts of neuromuscular production and regulation of movement with emphasis on neurophysiologic substrates and mechanisms underlying motor behavior.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY, OTHERS WITH PERMISSION OF INSTRUCTOR.

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SCHOOL OF MEDICINE
PHYSICAL THERAPY

PTS660 Theories of Movement Science

3 credits

Fall Semester

An in-depth review of classical theories and recent research in the movement sciences, to include the study and analysis of system theory and neurobiological substrates.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR.

PTS661 Motor Learning

3 credits

Spring Semester

The factors relating to, and affecting, the acquisition and performance of motor skills. Qualification of skill acquisition and performance are explored.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR.

PTS662 Advanced Topics in Neurodevelopment

3 credits

Offered By Announcement Only

Classical research and systems models of neurodevelopment is reviewed, analyzed, and related to current research on various areas of human development throughout the lifespan.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR.

PTS663 Interdisciplinary Programming for the Individual with Developmental Disabilities

1- 3 credits

Fall Semester

Overview of child development, service delivery models, with an emphasis on intra-disciplinary, multi-disciplinary, inter-disciplinary strategies, and community programming.

PREREQUISITE: OPEN TO PHYSICAL THERAPISTS AND GRADUATE PHYSICAL THERAPY STUDENTS, OR RELATED HEALTH PROFESSIONAL STUDENTS ONLY.

PTS664 Seminars in Neuroscience

3 credits

Offered By Announcement Only

This course explores the role and organization of the key units of the central and peripheral nervous systems at the molecular and cellular levels. The integrated functional physiology of systems neuroscience and behavioral neuroscience will be studied with special emphasis on neural contributions to involuntary and voluntary motor functions, perception, cognition, and learning.

PREREQUISITE: ACCEPTANCE INTO THE PHYSICAL THERAPY PHD STUDIES PROGRAM OR PERMISSION OF THE INSTRUCTOR.

PTS665 Health Promotion and Disease Prevention

2 credits

First & Second Summer Session

The role of physical therapists in health promotion and disease preventions.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS666 Rehabilitation of the Amputee

3 credits

Fall Semester

This course examines the scientific evidence related to the evaluation, treatment and management of clients who require intervention for diabetic foot and/or dysvascular limb potentially leading to amputation, amputation surgery, prosthetic appliances, functional assessment and amputee rehabilitation. Upper limb prosthetic management will also be examined.

PREREQUISITE: ACCEPTANCE INTO THE PHYSICAL THERAPY PHD STUDIES PROGRAM OR PERMISSION OF THE INSTRUCTOR.

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SCHOOL OF MEDICINE
PHYSICAL THERAPY

PTS667 Prosthetic Technology and Amputee Rehabilitation

3 credits

Offered By Announcement Only

This course examines the current scientific evidence related to prosthetic devices with regard to evaluation, fabrication, materials, fitting and functional outcomes. Emphasis is on state-of-the-art technology and the future of prosthetic designs.

PREREQUISITE: ACCEPTANCE INTO THE PHYSICAL THERAPY PHD STUDIES PROGRAM OR PERMISSION OF THE INSTRUCTOR.

PTS668 Rehabilitation Engineering and Assistive Technology

3 credits

Offered By Announcement Only

This course is designed for graduate students interested in developing an understanding of complementary roles of clinicians and engineers in assisting individuals with disabilities in all areas of life.

PREREQUISITE: ACCEPTANCE INTO THE PHYSICAL THERAPY PHD STUDIES PROGRAM OR PERMISSION FROM THE INSTRUCTOR.

PTS669 Seminars in Orthotics and Prosthetic Rehabilitation

3 credits

Offered By Announcement Only

Examination of current scientific evidence and clinical issues related to upper and lower limb amputees, and prosthetic and orthotic componentry and related technology. Students will discuss case studies and design appropriate devices to address the needs of the individuals in the cases.

PREREQUISITE: ACCEPTANCE INTO THE PHYSICAL THERAPY PHD STUDIES PROGRAM OR PERMISSION OF THE INSTRUCTOR.

PTS670 Education, Direction, and Supervision in Physical Therapy

2 credits

Spring Semester

Principles of education, direction and supervision pertain to physical therapy patient care management. Prerequisite: Open to Physical Therapy majors only.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS671 Complementary Therapies in Rehabilitation

2 credits

Fall Semester

Historical development and evidence-based approach to complementary therapies in rehabilitation.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS674 Educational Administration in Physical Therapy

3 credits

Spring Semester

Review of history and current issues in educational administration of physical therapy programs at the entry-level and post-graduate level.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR.

PTS675 Clinical Decision Making II

3 credits

Fall Semester

Integration of basic science and clinical science in developing a patient plan of care, with consideration of ethical, psychological, and economic factors.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

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SCHOOL OF MEDICINE
PHYSICAL THERAPY

PTS677 Instructional Methods in Physical Therapy Education

3 credits

Fall Semester

Overview of research in the professional education field, with specific applications to physical therapy academic and clinical education. Emphasis is placed on curriculum development, competency-based instructional design, testing, and instructional evaluation methods.

PREREQUISITE: ADMISSION TO THE PH.D. PROGRAM.

PTS678 Teaching Practicum

1- 3 credits

Fall & Spring Semester & First & Second Summer Session

Supervised instructional design, teaching and evaluation of entry level physical therapy students. Students participate as course instructors in entry-level master's degree physical therapy curriculum.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR.

PTS679 Anatomy of back and limbs.

3 credits

Offered By Announcement Only

Regional approach to the musculoskeletal, neural, and vascular systems of the back, upper limbs and lower limbs. For Physical Therapy graduate students with an interest in a professional career in teaching the anatomical sciences to students of the health professions including medical students.

PREREQUISITE: ACCEPTANCE INTO THE PHYSICAL THERAPY PHD STUDIES PROGRAM OR PERMISSION OF THE INSTRUCTOR.

PTS680 Anatomy of the Trunk

3 credits

Offered By Announcement Only

Regional approach to the musculoskeletal, organ, and circulatory systems of the thorax, abdomen, pelvis & perineum. For Physical Therapy graduate students with an interest in a professional career in teaching the anatomical sciences to students of the health professions including medical students.

PREREQUISITE: ACCEPTANCE INTO THE PHYSICAL THERAPY PHD STUDIES PROGRAM OR PERMISSION OF THE INSTRUCTOR.

PTS681 Anatomy of the Head and Neck

3 credits

Offered By Announcement Only

Regional approach to the musculoskeletal, neural, and vascular systems of the head and neck. For the Physical Therapy graduate students with an interest in a professional career in teaching the anatomical sciences to students of the health professions including medical students.

PREREQUISITE: ACCEPTANCE INTO THE PHYSICAL THERAPY PHD STUDIES PROGRAM OR PERMISSION OF THE INSTRUCTOR.

PTS682 Microscopic Anatomy.

3 credits

Offered By Announcement Only

Study of the structure and function of cells, tissues, and organ systems utilizing light microscope, electron microscopic images, and electronic media. This course is designed for Physical Therapy graduate students with an interest in a professional career in teaching the anatomical sciences to students of the health professions including medical students.

PREREQUISITE: ACCEPTANCE INTO THE PHYSICAL THERAPY PHD STUDIES PROGRAM OR PERMISSION OF THE INSTRUCTOR.

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SCHOOL OF MEDICINE
PHYSICAL THERAPY

PTS683 Human Embryology

3 credits

Spring Semester

Study of embryologic events from fertilization to birth in the human. Consideration of the early formation of the various organ systems, on clinical problems associated with birth defects, and means of prevention.

PREREQUISITE: ACCEPTANCE INTO THE PHYSICAL THERAPY PHD STUDIES PROGRAM OR PERMISSION OF THE INSTRUCTOR.

PTS684 Human Neuroanatomy

3 credits

Offered By Announcement Only

Detailed exploration of the human nervous system with an emphasis on structure-function relationship and clinical applications. This course is designed for Physical Therapy graduate students with an interest in a professional career in teaching the anatomical sciences to students of the health professions including medical students.

PREREQUISITE: ACCEPTANCE INTO THE PHYSICAL THERAPY PHD STUDIES PROGRAM OR PERMISSION OF THE INSTRUCTOR.

PTS685 Medical Diagnostic Tests

2 credits

Fall Semester

Basic principles of medical diagnostic tests commonly encountered in physical therapy.

PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS690 Physical Therapy Diagnosis

3 credits

Spring Semester

Study of the integration of didactic knowledge, clinical skills, and intuitive process into the formation of a clinical diagnosis which will direct treatment in physical therapy. Diagnosis as a process is compared to diagnosis in nursing, psychiatry, and medicine, and distinguished from assessment, examination, and screening.

PREREQUISITE: PRACTICING PHYSICAL THERAPIST.

PTS695 Clinical Research Methods I

3 credits

Fall Semester

An overview of measurement and sampling issues pertaining to clinical research in Physical Therapy.

PREREQUISITE: PERMISSION OF INSTRUCTOR.

PTS696 Applied Statistics in Physical Therapy

3 credits

Fall Semester

Basic Statistics taught from an applied perspective which includes statistical computing using SAS in a mainframe environment and interpretation of SAS output.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR.

PTS697 Clinical Research Methods II

3 credits

Spring Semester

A course focusing on issues in research design and analysis pertaining to clinical research in Physical Therapy.

PREREQUISITE: PTS 695, 696, OR PERMISSION OF THE INSTRUCTOR.

PTS698 Research Practicum

3 credits

Fall & Spring Semester & First & Second Summer Session

Practicum designed to familiarize the student with an area of research, to implement a pilot study in an area of interest, and to develop working relationship with a sponsoring faculty member.

PREREQUISITE: PERMISSION OF THE INSTRUCTOR.

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SCHOOL OF MEDICINE
PHYSICAL THERAPY

PTS699 Independent Study in Physical Therapy

1- 3 credits *Fall & Spring Semester & First & Second Summer Session*
Each course is designed to meet the needs of graduate students for in-depth study in a particular area of special interest.
PREREQUISITE: GRADUATE STUDENT STATUS; PERMISSION OF THE INSTRUCTOR.

PTS701 Role Seminar I

1 credits *Spring Semester & First & Second Summer Session*
Introduction to faculty role in an institution of higher education, including academic career expectations, resource utilization, faculty development, and evaluation systems.
PREREQUISITE: PHYSICAL THERAPY PH.D. STUDENTS ONLY.

PTS702 Role Seminar II

1 credits *Spring Semester & First & Second Summer Session*
Course covers leadership training, networking, time management, and coping strategies. Student advising, counseling, and referral strategies are included.
PREREQUISITE: PHYSICAL THERAPY PH.D. STUDENTS ONLY.

PTS703 Role Seminar III

1 credits *Fall Semester*
Initiation of research career and dynamics of research role development within an institution. Grant writing, funding sources, and proposal considerations are also covered.
PREREQUISITE: PHYSICAL THERAPY PH.D. STUDENTS ONLY.

PTS710 Pre-candidacy thesis

1- 6 credits *Fall & Spring Semester & First & Second Summer Session*
To be used for pre-candidacy Master's thesis research. Credit is awarded when thesis is accepted.
PREREQUISITE: CORE COURSES AND ELECTIVES.

PTS711 Evidence-based Project

1 credits *Offered By Announcement Only*
Capstone project for students enrolled in the post-professional Doctor of Physical Therapy Program.
PREREQUISITE: LICENSED PHYSICAL THERAPISTS ENROLLED IN THE POST-PROFESSIONAL DPT PROGRAM.

PTS712 Clinical Internship IV

3 credits *Fall & Spring Semester & First & Second Summer Session*
Supervised clinical education emphasizing clinical skills. Competence is expected in areas such as neurofacilitation techniques, and evaluation and treatment of amputees, central nervous system dysfunctions, and spinal cord dysfunction.
PREREQUISITE: FOR PHYSICAL THERAPY MAJORS ONLY.

PTS713 Clinical Internship V

1- 3 credits *Fall & Spring Semester & First & Second Summer Session*
Supervised clinical education emphasizing skills previously taught in course sequences. Competence is expected in areas such as conservative management of spinal dysfunctions, growth and development neurofacilitation techniques, central nervous system dysfunctions, clinical administrative procedures, and clinical research techniques.
PREREQUISITE: MUST BE IN THE P.T. MASTERS PROGRAM.

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SCHOOL OF MEDICINE
PHYSICAL THERAPY

PTS715 Post-candidacy thesis

1- 6 credits *Fall & Spring Semester & First & Second Summer Session*
Required of students working for the Master's Degree. While working on the thesis, students enroll for credit. Credit is awarded when thesis is accepted.
PREREQUISITE: CORE COURSES AND ELECTIVES.

PTS720 Research in Residence

0 credit *Fall & Spring Semester & First & Second Summer Session*
Used to establish research in residence for the thesis for the Master's Degree after the student has enrolled for the permissible cumulative total in PTS 710. Credit not granted. May be regarded as full time residency.
PREREQUISITE: CORE COURSES, ELECTIVES, PTS 710.

PTS725 Continuous Registration--Master's Study

0 credit *Fall & Spring Semester & First & Second Summer Session*
To establish residence for non-thesis master's students who are preparing for examinations or completing other projects. Credit not granted. Regarded as full time residence.

PTS730 Pre-candidacy Dissertation.

1- 6 credits *Fall & Spring Semester & First & Second Summer Session*
To be used for pre-candidacy Doctorate dissertation research.

PTS740 Post-candidacy Dissertation.

1-12 credits *Fall & Spring Semester & First & Second Summer Session*
The student will enroll for credits as determined by his/her advisor, but not for less than a total of 12. No more than six hours may be taken in a regular semester, nor more than three in a summer session. When a student has passed his/her qualifying exams and is engaged in an Assistanship, he/she may still take the maximum allowable credit stated above.

PTS743 Measuring Health Outcomes

3 credits *Fall & Spring Semester & First & Second Summer Session*
An in depth analysis of the use and construction of instruments designed to measure health outcomes. Topics covered include creating and selecting items, scaling responses, scale construction, response bias, reliability, validity, measuring change, and methods of administration.
PREREQUISITE: PERMISSION OF INSTRUCTOR.

PTS750 Research in Residence

0 credit *Fall & Spring Semester & First & Second Summer Session*
To establish residence for the PhD, or DPT, after the student has been enrolled for the permissible cumulative total in appropriate doctoral research or clinical practice. Credit not granted, may be regarded as full-time residence as determined by the Dean of the Graduate School.
PREREQUISITE: PERMISSION OF THE DIRECTOR.

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Graduate Course Listing
SCHOOL OF MEDICINE
PHYSIOLOGY & BIOPHYSICS

PHS510 Cell Physiology Biophysics

2 credits

Fall Semester

This course is designed as preparation for the study of mammalian physiology. Course is usually intensive, adapted to the schedule of the medical curriculum and occupying the equivalent of two to three days per week for two-three weeks. The student is introduced to general principles of cell physiology, chemical and physical structure of membranes, membrane transport, and electrical membrane phenomena. Topics include excitation, contraction, energy transduction, nerve impulse conduction, and synaptic transmission. Course utilizes lecture and laboratory.

PREREQUISITE: PERMISSION OF THE DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

PHS511 Neurophysiology

3 credits

Spring Semester

Physiology of the mammalian nervous system. Course is intensive, adapted to the schedule of the medical curriculum and comprising roughly five hours of lecture and four hours of conference weekly for five to six weeks. A lecture course coordinated with neuroanatomy.

PREREQUISITE: PHS 510 OR 641, OR AN EQUIVALENT; PERMISSION OF THE DEPARTMENTAL GRADUATE STUDIES COMMITTEE. PREREQUISITE OR COREQUISITE: MDB 505.

PHS512 Systemic Physiology

5 credits

Spring Semester

Physiology of the mammalian cardiovascular, respiratory, renal, digestive, endocrine, and reproductive systems. Course is intensive and adapted to the schedule of the medical curriculum, occupying the equivalent of about two days a week for most of semester. Lecture and laboratory are included.

PREREQUISITE: PERMISSION OF THE GRADUATE STUDIES COMMITTEE, INCLUDING ENDOCRINOLOGY.

PHS600 Research Seminar in Membrane Biophysics and Neurobiology

1 credits

Fall & Spring Semester & First & Second Summer Session

The student may be required to present a short talk on a research area of interest. All students in the Department of Physiology and Biophysics are required to register for this seminar. For other students, permission of the Departmental Graduate Studies Committee is required.

PHS609 Research

1- 5 credits

Fall & Spring Semester & First & Second Summer Session

Students work with individual members of the department on research problems. Orientation to the areas of research in the field and the techniques used is included.

PREREQUISITE: PERMISSION OF THE DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

PHS611 Accelerated Basic Science Medical Curriculum

1-18 credits

Fall & Spring Semester

Beginning in the latter part of June each year, extending to the middle of February of the ensuing year, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. A single grade will be entered on the graduate transcript for this course.

PREREQUISITE: ADMISSION TO THE COMBINED M.D./PH.D. PROGRAM.

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SCHOOL OF MEDICINE
PHYSIOLOGY & BIOPHYSICS

PHS612 Pathobiology I

3 credits

Offered By Announcement Only

Required for Physician Scientist Program students; open to graduate students. Two, three-hour sessions (first hour at multi-headed scope followed by two hours of laboratory) per week for eight weeks in the fall semester (September and October; days and times to be arranged). The purpose of the pathobiology course is to provide graduate students with knowledge of basic principles for understanding normal histomorphology and pathologic lesions associated with experimentally induced and naturally occurring diseases. The keystone of this innovative, short course is the small group's socratic study of a series of autopsy cases--each represented by a set of microscopic slides. The cases are preselected to allow the students to focus on specific, basic concepts early and organ-system lesions later. Students spend the first hour of the biweekly sessions at a multi-headed scope creating a profile of the patient--including age, sex, race, and chief disease. At the end of the first hour deliberations, students receive feedback regarding their conclusions by being provided with a summary of the patient's history and autopsy findings. Students review relevant gross specimens and kodachromes during the biweekly two-hour laboratory sessions.

PREREQUISITE: ADMISSION TO THE PHYSICIAN SCIENTIST PROGRAM OR THE GRADUATE PROGRAM OF ONE OF THE FIVE BASIC SCIENCE DEPARTMENTS LOCATED AT THE SCHOOL OF MEDICINE.

PHS620 Neurophysiology

3 credits

Spring Semester

Physiology of the mammalian nervous system. The course will consist of both didactic lectures and discussions of current research literature.

PREREQUISITE: PHS 510 OR 641 AND PERMISSION OF THE DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

PHS631 Special Work

1- 5 credits

Fall & Spring Semester & First & Second Summer Session

Special work, lecture, laboratory, reading, seminar, or a combination of these as determined by advisor in accordance with student's interest.

PREREQUISITE: PERMISSION OF THE DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

PHS641 Principles of Membrane Physiology and Biophysics I

2 credits

Fall Semester

Course discusses chemical and physical structure of membranes, model systems, permeability and transport, membrane potential, ionic channels, excitability in nerve and muscle, ionophores, active transport, and membrane receptors. Identical with MCP 641.

PREREQUISITE: CHM 361; BMB 506; AND PERMISSION OF DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

PHS642 Principles of Membrane Physiology and Biophysics II

2 credits

Fall Semester

Course topics include osmosis and cell volume, tracer analysis of permeability and compartmentation, theory of channels and carriers, cable properties, Hodgkin-Huxley formalism, Na, K, and Ca ion channels, regulation of cellular Na, Ca activities, single-channel analysis, chemical synapses, membrane receptors, cell junctions, excitation and E-C coupling in muscle. Identical with MCP 642.

PREREQUISITE: PHS 641.

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SCHOOL OF MEDICINE
PHYSIOLOGY & BIOPHYSICS

PHS651 PHS Cell Biology

3 credits

Offered By Announcement Only

The dynamics of eukaryotic cells examined from the standpoint of the structure and function, regulation of function, and interactions of the subcellular organelles.

PREREQUISITE: PERMISSION OF THE DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

PHS652 Developmental Biology

3 credits

Offered By Announcement Only

Identical to MDB 652.

PREREQUISITE: PHS 651.

PHS663 Developmental Neurobiology

3 credits

Offered By Announcement Only

Development of the nervous system in all its aspects. Topics include origins of neurons and glia, nerve cell differentiation, cellular interactions during neurogenesis, formation of synaptic connections, neuronal circuits, development of nervous functions and ontogeny of behavior, mechanisms of repair and reorganization in the nervous systems, and theories of neuronal plasticity.

PREREQUISITE: A KNOWLEDGE OF NEUROBIOLOGY AND DEVELOPMENTAL BIOLOGY BEYOND THE ELEMENTS: FOR EXAMPLE, PHS 511 AND BIL 564 OR EQUIVALENTS. PERMISSION OF THE DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

PHS668 Neuropharmacology

3 credits

Offered By Announcement Only

An intensive seminar course for advanced students covering the mechanism of action of drugs on basic neural processes including action potentials, neurotransmission, and central nervous activity. Course is taught jointly by staff members of Molecular and Cellular Pharmacology and Physiology/Biophysics.

PREREQUISITE: PHS 510, 511 OR 641; PHA 605; CONSENT OF INSTRUCTOR AND DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

PHS669 Nerve and Synapse

2 credits

Fall Semester

An advanced seminar course in the basic mechanisms underlying the propagated nerve impulse and synaptic transmission.

PREREQUISITE: PHS 510 AND 511; CONSENT OF INSTRUCTOR AND DEPARTMENTAL GRADUATE STUDIES COMMITTEE.

PHS680 Research Ethics

0 credit

Fall Semester

The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Department or Program. This is a six-hour course and will be given in two sessions of three hours each.

PREREQUISITE: PERMISSION OF THE GRADUATE ADVISOR.

PHS710 Master's Thesis

1- 6 credits

Offered By Announcement Only

The student working on his/her master's thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

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PHYSIOLOGY & BIOPHYSICS

PHS720 Research in Residence

0 credit

Offered By Announcement Only

Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in PHS 710 (usually six credits). Credit not granted. May be regarded as full time residence.

PHS730 Doctoral Dissertation

1-12 credits

Fall & Spring Semester & First & Second Summer Session

Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of PHS 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

PHS740 Doctoral Dissertation- Post Candidacy

1-12 credits

Fall Semester

PHS750 Research in Residence

0 credit

Offered By Announcement Only

Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

PROGRAM IN BIOMEDICAL SCIENCES

PIB575 Perl Programming Lab

1 credits

Fall & Spring Semester

The Perl programming lab is for students who have little or no programming experience. The objective of the lab is to teach students to write computer code that will automate and speed up their genetic and genomic data analysis and provide new ways to explore the data to advance knowledge discovery in biology. Each lab will start with a 40 minute lecture in which we discuss new syntax and programming elements and the rest of the time will be spent on hands-on programming assignments using real genetic/genomic/proteomic data sets. Students will be monitored and will get help in completing their assignments. In a popular book, "Programming Perl" (published by O'Reilly Media), the programming language is described as: "Perl is a language for getting your job done." A stated design goal of Perl is to make easy tasks easier and difficult tasks possible.

PIB601 Advanced Biomedical Science Lectures

5 credits

Fall Semester

An interdisciplinary survey of molecular and cellular biology. Topics include protein structure and function, protein synthesis, nucleic acids, genetic code, gene technology, genetic analysis, control of cellular activity, molecular anatomy of genes and chromosomes, DNA replication, repair, and recombination, regulation of transcription, RNA processing, and post-transcriptional control.

PREREQUISITE: PERMISSION OF INSTRUCTOR

PIB602 Scientific Reasoning

3 credits

Fall Semester

Students are taught with a combination of lectures, scientific reasoning and methods classes, and small group sessions devoted to primary literature.

PREREQUISITE: PERMISSION OF INSTRUCTOR

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PIB631 PIB 631 Special Work

1- 6 credits

Fall & Spring Semester & First & Second Summer Session

1 - 6 credits Special work, lecture, laboratory or a combination of these, as determined by advisor in accord with student's individual interest. Course is offered only on demand.

PREREQUISITE: PERMISSION FROM ADVISOR

PIB640 The Business of Science

3 credits

Fall & Spring Semester

This survey course will introduce graduate students in the biomedical sciences and medical students to the basic principles of business to enhance their effectiveness in being professional scientists. Topics will include: Project Management, Personnel Management, Accounting and Budgeting Process, Invention Disclosures and Patents, and Developing a Business Plan. Students will develop mock projects and business plans and participate in workshops to develop practical skills.

PREREQUISITE: PERMISSION OF INSTRUCTOR AND SUCCESSFUL COMPLETION OF THE FIRST YEAR OF GRADUATE LEVEL WORK.

PIB680 Research Ethics

0 credit

Fall Semester

The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the department or program. This is a six-hour course and will be given in two sessions of three hours each.

PREREQUISITE: PERMISSION OF THE GRADUATE ADVISOR