

School of Medicine

Patricia L. Monteleone, M.D., M.B.A., M.H.A.,
Collegiate Dean

Besides contributing in particular to the first two years of the Doctor of Medicine degree curriculum, the pre-clinical, medical-science departments offer postbaccalaureate work leading to the Ph.D. degree. A total of five offerings, each affiliated with an individual department, is available; however, students admitted for direct Ph.D.-degree study take a common, first-year core in the basic biomedical sciences. Furthermore, studies toward the Ph.D. degree in a medical-science field may be combined with the M.D.-degree curriculum, and the two degrees pursued concurrently by selected students. The M.S. (Research) degree in Anatomy is also offered.

BASIC BIOMEDICAL SCIENCE

Willis K. Samson, Ph.D.,
Graduate Program Director

Admission to all Ph.D. degree programs in the biomedical sciences is by application to the core graduate program in Basic Biomedical Science. This interdisciplinary offering is intended for all students who are interested in biomedical research and/or teaching careers. Its objectives are to provide students with a strong foundation in all aspects of basic biomedical science and the freedom to explore diverse research opportunities during the first year of graduate training. The first-year curriculum combines lectures, small group discussion sessions, and seminars to develop self-confidence and familiarity with a breadth of biomedical science and technology that spans the disciplines of anatomical, biochemical, cellular, molecular, developmental, genetic, and physiological sciences.

At the end of this integrated first-year program, students select a dissertation research topic and mentor, and enter into one of the four individual graduate programs in the School of Medicine. The subsequent requirements for completion of the Ph.D. degree vary with the individual program and include specialized advanced courses and the performance of original research leading to completion of the dissertation.

Required Courses

BBS.501 Basic Biomedical Science I;

BBS.502 Special Topics in Basic Biomedical Science I;

BBS.503 Basic Biomedical Science II;

BBS.504 Special Topics in Basic Biomedical Science II;
and

BBS.510 Responsible Conduct in Research.

Additional Requirements

BBS.592 Basic Biomedical Science Colloquium
(both semesters) and

BBS.597 Introduction to Basic Biomedical Research
(both semesters).

COURSE DESCRIPTIONS

BBS.501 Basic Biomedical Science I (5)

Prerequisites: Admission into the common first year biomedical sciences graduate program or permission of the Course Director. This intensive, multi-disciplinary lecture course is taught by faculty from all five doctoral programs in the medical school. The lecture topics include macromolecular structure, shape and information; DNA, RNA and protein synthesis; genetics and control of gene expression; cytoskeleton, extracellular matrix, celljunctions and intracellular organelles; and pathways and control of carbohydrate metabolism. BBS.G502 is co-requisite. (Offered every Fall semester.)

BBS.502 Special Topics in Basic Biomedical Science I (4)

An intensive multi-disciplinary course designed for all biomedical graduate students. Course involves participation in small group laboratory exercises involving problem solving and critical analysis of the current scientific literature, with a particular focus on the current, state-of-the-art techniques in cellular and molecular biology. The special topics are selected to coordinate with the lecture topics in the co-requisite course BBS.G501. (Offered every Fall semester.)

BBS.503 Basic Biomedical Science II (5)

An intensive multi-disciplinary course designed for all biomedical graduate students. A continuation of BBS.501, the course topics include cell membranes and cell signaling, immunology and virology; introduction to the central nervous system; fundamental of drug action; integrative and systems biology. BBS.504 is co-requisite. (Offered every Spring semester.)

BBS.504 Special Topics in Basic Biomedical Science II (4)

An intensive multi-disciplinary course designed for all biomedical students. Course involves participation in small group exercises involving problem solving and critical analysis of current scientific literature in selected special topics, as related to the lecture topics in the co-requisite course BBS.503. (Offered every Spring semester.)

BBS.510 Responsible Conduct in Research (0)

Course covers a variety of topics relevant to the ethical aspects of conducting and reporting scientific investigations including general ethical principles, use of animals and human subjects in research, authorship, mentorship, conflicts of interest, and scientific misconduct. (Offered every Spring semester.)

Doctor of Philosophy in Anatomy

Prerequisite

Background in biology, chemistry, or psychology.

Required Courses

ANAT.500 Human Gross Anatomy;
ANAT.510 Human Histology and Ultrastructure;
ANAT.520 Human Embryology;
ANAT.530 Human Systems Neurobiology;
ANAT.544 Basic Research Techniques in Anatomy;
ANAT.630 Advanced Systems Neurobiology;
BBS.510 Ethics for Research Scientists; and
RMET.625 Analysis of Variance and Experimental Design.

Additional Requirements

ANAT.689 Anatomy Seminar or
ANAT.691 Anatomy Journal Club Teaching experience
Minimum postbaccalaureate credit-hours in preparation for preliminary degree examinations: 48.

Research proposal to be submitted prior to admission to the preliminary oral examinations.

A formal minor is not permitted.

COURSE DESCRIPTIONS

Upper-Division Courses

Graduate Courses

ANAT.400 AHP Gross Anatomy (6)

ANAT.430 AHP Neurosciences (5)

ANAT.500 Human Gross Anatomy (8)

Structure and function of human body; emphasis on anatomical relationships and concepts and their functional significance; dissection required. (Offered every Spring semester.)

ANAT.510 Human Histology and Ultrastructure (5)

Microscopic anatomy of human body; emphasis on relationships between structure and function of tissues and organs. (Offered every Fall semester.)

ANAT.520 Human Embryology (2)

Prenatal human development; emphasis on correlation of normal development with development of common congenital malformations. (Offered every Fall semester.)

ANAT.530 Human Systems Neurobiology (5)

Structure and function of the human nervous system; emphasis on neuroanatomical relationships of functional systems and neurobiological concepts of brain mechanisms. (Offered every Spring semester.)

BBS.592 Basic Biomedical Science Colloquium (1)

Students are introduced to the techniques of critical data analysis and formal scientific presentation through weekly colloquia. Second-year students from the various biomedical science departments present in the Fall semester, first-year students present in the spring semester. Emphasis is placed on styles of presentation and techniques for effective communication. In the Spring semester, each student critically reviews and presents a topic from the current scientific literature at one of the weekly colloquia. All students are required to attend both the scientific presentation and a 10-15 minute discussion session that follows. (Offered every Fall and Spring semester.)

BBS.597 Introduction to Basic Biomedical Research (2)

Students are provided hands-on experience with the most modern and commonly used technologies in the biomedical sciences. The First semester course consists of a laboratory curriculum focusing on enzymology, protein purification, gene cloning and expression. In the Second semester, students participate in four, five week rotations in faculty laboratories at the Medical School. (Offered every Fall and Spring semester.)

CENTER FOR ANATOMICAL SCIENCE AND EDUCATION

Daniel L. Tolbert, Ph.D.,

Graduate Program Director

Director, Center for Anatomical Science and Education

The Center for Anatomical Science and Education offers programs leading to the Master of Science (Research) and Doctor of Philosophy degrees. The master's degree program prepares students for teaching in the anatomical disciplines and provides experience with fundamental anatomical research methodologies. The doctoral program emphasizes training in clinical human anatomy and independent research for individuals seeking careers in medical-school or university teaching. Research in biological structure and function focuses on clinically relevant anatomical topics or neurobiology.

Master of Science (Research) in Anatomy

Prerequisite

Background in biology, chemistry, or psychology.

Required Courses

ANAT.500 Human Gross Anatomy;

ANAT.510 Human Histology and Ultrastructure;

ANAT.520 Human Embryology;

ANAT.530 Human Systems Neurobiology;

ANAT.544 Basic Research Techniques in Anatomy; and

PAEH.504 General Physiology.

BIOCHEMISTRY AND MOLECULAR BIOLOGY

William S. Sly, M.D.,
Department Chairperson

David A. Ford, Ph.D.,
Graduate Program Director

Students with bachelor's degrees enter the Biochemistry and Molecular Biology graduate program after acceptance into and completion of the one-year Basic Biomedical Science core program. After receiving a firm background in the fundamentals of biomedical science and the opportunity to experience research in different laboratories during this first year, the student selects a faculty mentor and a specific graduate program. Students with master's degrees in biochemistry or related fields can apply for direct entry into the Biochemistry and Molecular Biology graduate program. Graduate training in the Department of Biochemistry and Molecular Biology includes advanced coursework, instruction in the preparation of a written research proposal, oral defense of a written proposal for dissertation research, and performance of original laboratory research leading to the Ph.D. dissertation. Flexibility is provided for optional training in secondary areas such as teaching or scientific writing.

Doctor of Philosophy

Prerequisites

Equivalent of an undergraduate major in chemistry, biology or a related subject.

Required Courses

BBS.501 Basic Biomedical Science I;
BBS.502 Special Topics in Basic Biomedical Science I;
BBS.503 Basic Biomedical Science II;
BBS.504 Special Topics in Basic Biomedical Science II;
BBS.510 Ethics for Research Scientists;
BCH.623 Macromolecules: Structure, Function, and Interactions;
BCH.624 Advanced Topics in Biochemistry and Molecular Biology; and
BCH.625 Preparation and Evaluation of Scientific Research Proposal.

ANAT.544 Basic Research Techniques in Anatomy (2)

Fundamental techniques and instrumentation; emphasis on principles underlying preparation of material for histological, histochemical, and ultrastructural examination and interpretation of results. (Offered every Fall semester.)

ANAT.595 Special Study for Examinations (0)

ANAT.597 Research Topics (1-3)

Prior permission of advisor and program director required.

ANAT.598 Graduate Reading (1-3)

Prior permission of advisor and program director required.

ANAT.599 Thesis Research (0-6)

ANAT.5CR.90 Master's Degree Study (0)

ANAT.630 Advanced Systems Neurobiology (1)

This course may be taken concurrently with the Human Systems Neurobiology course. Lectures and moderated discussions of assigned jour

nal articles will consider in greater detail the topics presented in the Human Systems Neurobiology course. (Offered every Spring semester.)

ANAT.632 Developmental Neurobiology (2)

Prerequisites: ANAT.530, ANAT.630, and ANAT.634. A presentation of the principles and concepts that underlie the development of the nervous system. Lectures and discussions of assigned journal articles will cover neurogenesis, neuronal differentiation, the formation of functional neural circuit and regressive phenomena during brain development. (Offered occasionally.)

ANAT.634 Cellular Neurobiology (4)

The basic concepts of nervous system function including neuronal structure and function, structure and function of neuroglia, physical-chemical properties of the resting neuron, electrophysiology of the active neuron, pharmacology and electrophysiology of the synapse, transmitter substances and receptors, and effector systems will be presented in this course. (Offered every Fall semester.)

ANAT.667 Visual Neuroscience (2)

Prerequisites: ANAT.530 and ANAT.634. Overview of visual processing, from chemical mechanism of transduction by retinal photoreceptors to anatomical and physiological correlates of visual perception in cerebral cortex. Assigned readings on analysis of receptive field properties, mechanisms of dark and light adaptation, sensation of color and control of ocular reflexes. Human visual dysfunctions included. (Offered every Spring semester.)

ANAT.689 Anatomy Seminar (1)

Selected topics in anatomy. Attendance and participation required for all M.S.(R) and Ph.D. students. (Offered every Fall and Spring semester.)

ANAT.691 Anatomy Journal Club (1)

Selected topics in anatomy. Attendance and participation required for all M.S.(R) and Ph.D. students.

ANAT.695 Special Study for Examinations (0)

ANAT.697 Research Topics (1-3)

Prior permission of advisor and program director required. May be repeated. Titles of topics must be registered.

ANAT.698 Graduate Reading Course (1-3)

ANAT.699 Dissertation Research (0-6)

ANAT.6CR.99 Doctor of Philosophy Degree Study (0)

Additional Requirements

BBS.592 Basic Biomedical Science Colloquium (two semesters);

BBS.597 Introduction to Basic Biomedical Research (two semesters); and

BCH.692 Biochemistry and Molecular Biology Colloquium (one semester).

Additional coursework in chemistry or biology may be required at the discretion of the Department Chairperson or Graduate Program Director.

Program may include courses in one of the fields of preclinical medicine as electives.

Additional Requirements for the Doctorate

Total post-baccalaureate credit-hours toward preliminary examinations for the doctorate: at least 48.

A formal minor to accompany the doctoral major in Biochemistry and Molecular Biology may be taken at the discretion of the Department Chairperson.

COURSE DESCRIPTIONS

Graduate Courses

BCH.595 Special Study for Examinations (0)

BCH.5CR.90 Master's Degree Study (0)

BCH.599 Thesis Research (0-6)

BCH.623 Macromolecules: Structure, Function, and Interactions (3)

Prerequisite: Permission of Instructor. Students participate in self-directed problem-solving exercises designed to provide familiarity with concepts and methodology in the analysis of enzyme catalysis, protein-nucleic acid interactions, and protein function and regulation. The course uses lectures, primary literature presentations and practical exercises to illustrate the key concepts. (Offered every Fall semester.)

BCH.624 Molecular Basis of Human Disease (3)

Prerequisite: Permission of Instructor. Biochemical mechanisms, principles and concepts will be exemplified in studies of mechanisms of pathogenesis and treatments of human diseases. Lectures will be held three times per week, and students will be assigned original research articles for reading. Students will critically evaluate the assigned reading and demonstrate knowledge and appreciation of the biochemical principles underlying human diseases. (Offered every Fall semester.)

BCH.625 Preparation of Scientific Research Proposals (3)

Prerequisite: Permission of Instructor. Students select a research topic outside of their dissertation area and prepare an NIH-style grant proposal. There will be lectures on grant writing strategies and weekly meetings with advisors with expertise in the area of the proposal. Students will give an oral presentation on their proposal. Proposals will be critiqued by three faculty members and the students will revise the proposals based on these critiques. (Offered every Spring semester.)

BCH.628 Introduction to Genomics and Bioinformatics (2)

Prerequisites: BBS.501 and BBS.502 or consent of the Instructor. Introduces current practices in genomics and bioinformatics. Lecture topics include finding information in sequence and structure databases, protein motif and family classification, comparative genomics, and large-scale gene-expression data analysis. Computer-based exercises will coordinate with lecture topics. (Offered every Spring semester.)

BCH.691 Biochemistry and Molecular Biology Journal Club (1)

Prerequisite: Permission of Instructor. Once per semester, each student selects a scientific research paper in the area of enzymology, macromolecular interaction, cellular regulation, molecular biology, or genetics. An informal oral presentation of the scientific background, critical evaluation of the data, and conclusions is presented to the Cellular Biology Journal club. (Offered every Fall and Spring semester.)

BCH.692 Biochemistry and Molecular Biology Colloquium (1)

Prerequisite: Permission of Instructor. Once per semester each student selects a scientific research paper outside the area of their dissertation topic and makes a critical evaluation of the data and conclusions for oral presentation to faculty and students. (Offered every Fall semester.)

BCH.695 Special Study for Examinations (0)

BCH.697 Research Topics (1-3)

Prior permission of guiding professor and department/program chairperson required.

BCH.698 Graduate Reading Course (1-3)

Prior permission of guiding professor and department/program chairperson required.

BCH.699 Dissertation Research (0-6)

BCH.6CR.99 Doctor of Philosophy Degree Study (0)

MOLECULAR MICROBIOLOGY AND IMMUNOLOGY

William S. M. Wold, Ph.D.,
Department Chairperson

H. Peter Zassenhaus, Ph.D.,
Graduate Program Director

The Department of Molecular Microbiology and Immunology offers a graduate program in molecular microbiology leading to the Ph.D. degree. Our goal is to graduate exceptionally well-trained researchers who possess the necessary background and experience for a career in academic science or biotechnology. Research in the department is diversified. Areas of research emphasis included cell and molecular biology, virology, and immunology.

Admission to the Ph.D. program in Microbiology will be by application to the graduate program in Basic Biomedical Sciences. This interdisciplinary graduate program is intended for all students who are interested in basic biomedical research and/or teaching careers. Its objectives are to provide students with a strong foundation in all aspects of basic biomedical science and the freedom to explore diverse research opportunities during the first year of graduate training. The first-year curriculum combines lectures, small group discussion sessions, and seminars to develop self-confidence and familiarity with a breadth of biomedical science and technology that spans the disciplines of anatomical, biochemical, cell, molecular, developmental genetic, and physiological sciences.

Doctor of Philosophy

Prerequisites

Coursework in college physics, calculus, organic chemistry, and the biological sciences.

Required Courses

RMET.597 Biostatistics for Medical Sciences

BBS.501 Basic Biomedical Science I;

BBS.502 Special Topics in Basic Biomedical Science I;

BBS.503 Basic Biomedical Science II;

BBS.504 Special Topics in Basic Biomedical Science II;

BBS.510 Ethics for Research Scientists;

MB.635 Virology

MB.665 Basic Immunobiology.

Additional Requirements

BBS.592 Basic Biomedical Science Colloquium (two semesters);

BBS.597 Introduction to Basic Biomedical Research (two semesters);

MB.691 Microbiology Journal Club; and

MB.692 Microbiology Colloquium.

Minimum postbaccalaureate credit-hours in preparation for preliminary degree examinations: 48.

Research proposal to be submitted prior to admission to the preliminary oral examination.

A formal minor is not permitted.

COURSE DESCRIPTIONS

Graduate Courses

MB.531 Introduction to Research Techniques and Topics (1-3)

Students within the first year of their studies in the Department can spend a minimum of six weeks doing a research project with one or more faculty members. Projects are designed to acquaint the student with a specific line of research and to help them learn techniques and develop research skills. (Offered every semester.)

MB.624 Advanced Topics in Immunology (2-3)

Prerequisite: MB.665. A discussion of research publications focused on topics of current importance in molecular and cellular immunology. These may include recombination in the Ig and TCR loci; signal transduction coupled to antigen and cytokine receptors; molecular aspects of intracellular pathways in antigen processing; ligand-receptor interactions in cell-cell communications; chemokine and cytokine networks and infection; role of T cell subsets in host defense mechanisms; and immune mechanisms in pathogenesis of infectious disease. (offered every Spring semester.)

MB.635 Virology (3)

A survey course in animal and human virology covering the structure, assay and identification of viruses that infect animal cells. Virus lifecycle and replication strategies and use of viruses as tools to investigate mechanisms of DNA replication, gene expression and cellular growth control. Discussion of major DNA and RNA virus families. Biological, biochemical and physical properties of oncogenic DNA and RNA tumor viruses and their interaction with cells. Role of oncogenes in normal growth control and transformation. Molecular aspects of virus pathogenesis, including cellular inflammatory and immunological responses of host cells and organisms to virus infection. Epidemiology of acute infections and strategies for persistence including regulation of apoptosis and the cell cycle, and immune evasion. Concepts in vaccine development and antiviral therapy. (Offered every Fall semester.)

MB.640 Biological Safety Microbiology for the Research Scientist (3)

This course will provide an overview of the field of biological safety and its application to the control of biohazards in a wide variety of settings for students at all levels who are interested in the epidemiology of microbial diseases. Students will review biohazards associated with occupational laboratory acquired infections, and examine select case studies to identify critical biosafety lapses. The course will teach participants how to perform a qualitative risk assessment for biohazards and learn how to employ control strategies to appropriately manage these risks. Course concepts can be applied to the review of proposed research involving biohazards, along with emphasizing protective measures when addressing incidents involving biohazards, such as emergency spills or bioterrorism related events. In addition, coverage of the Select Agent Program and additional security practices entailed with research will be covered. (Offered online Fall of 2009).

MB.665 Basic Immunobiology (3)

A survey course that presents fundamental concepts in molecular and cellular immunology. Topics include mechanisms in innate immunity such as Toll-like receptors, chemokine and cytokine signaling, complement and cellular responses; the genetics, biochemistry and biology of antigen recognition structures and antigen processing; T and B cell development; lymphocyte activation and cell-cell interactions in adaptive immunity; and host immune responses in infection, allergy, and autoimmunity. Emphasis on experimental approaches and some review of current literature. (Offered every Fall semester.)

MB.675 Immunology Journal Club (2)

An advanced topics literature survey. Students attend weekly presentations of current publications on topics in molecular and cellular immunology, vaccine development and gene therapy. Each student presents twice per semester. (Offered every semester.)

MB.682 Advanced Topics in Virology and Cell Biology (1-3)

Prerequisite: MB.635 or MB.650. Students meet with the Instructor once each week to discuss and analyze a research topic in virology or the relationship between viruses and their host cells. Material is taken from current research papers published in leading research journals. (Offered every semester.)

MB.691 Microbiology Journal Club (0-1)

Students present important research published in the biomedical literature in the Fall semester and present their own research in the Spring semester. Each DMMI student presents each semester. Required of all students every Fall and Spring semester that they are in the program.

MB.692 Microbiology Colloquium (0-1)

Students attend the biweekly MMI seminar series and critique the scientific presentations. One or two meetings with the course master and held each semester to discuss scientific presentation skills. Students collectively invite and host one or more seminar speakers per semester. Required of all students every Fall and Spring semester that they are in the program.

EMB.695 Special Study for Examinations (0)

MB.697 Research Topics (0-3)

Several students meet with the Instructor once a week to discuss and analyze a research topic. Material is taken for current research papers published in leading journals.

MB.698 Graduate Reading Course (1-3)

Prior permission of the guiding professor is required.

MB.699 Dissertation Research (0-6)

MB.6CR.99 Doctor of Philosophy Degree Study (0)

PATHOLOGY

Guillermo Herrera, M.D.,
Department Chairperson

Jacki Kornbluth, Ph.D.,
Graduate Program Director

The graduate program in the Department of Pathology offers training in biomedical research with a strong emphasis in medically important areas including tumor biology and cardiovascular and pulmonary biology. Students will acquire knowledge of basic disease processes, learn research methodologies, and utilize state-of-the-art cell and molecular biology techniques in preparation for research careers. In addition to the standard array of equipment necessary for performing basic biochemical and cellular biology, the Pathology Department also contains well-equipped facilities for flow cytometry, single-cell microinjection, video and confocal microscopy, and scanning and transmission electron microscopy.

Doctor of Philosophy

Prerequisites

An undergraduate degree in biology or chemistry. Advanced biology coursework is recommended.

Required Courses

BBS.501 Basic Biomedical Science I;
BBS.502 Special Topics in Biomedical Science I;
BBS.503 Basic Biomedical Science II;
BBS.504 Special Topics In Biomedical Science II;
BBS.510 Ethics for the Research Scientist; and
PATH.501 Pathobiology.

Additional Requirements

BBS.592 Basic Biomedical Science Colloquium
(two semesters);
BBS.597 Introduction to Basic Biomedical Research
(two semesters);
PATH.691 Molecular Pathobiology Journal Club; and
PATH.692 Pathology Research Colloquium.
Postbaccalaureate credit hours in preparation for preliminary degree examinations: minimally 48.

A formal minor is not permitted.

COURSE DESCRIPTIONS

Graduate Courses

PATH.501 Pathobiology (5)

Open to students in the Basic Biomedical Science core program and to qualified non-core graduate students with the permission of the Pathology program director. General pathobiology and the basic mechanisms of cell and tissue injury and repair. (Offered every Fall semester.)

PATH.502 Molecular Pathobiology (4)

A continuation of PATH.501. Pathology and pathophysiology of diseases on a cellular/molecular basis. Lecture and group discussions. (Offered every Spring semester.)

PATH.535 Introduction to Microscopy Techniques (3)

Lecture and laboratory course on the application of light and electron microscopic techniques in biomedical research. Hands-on experience at the microscope and practical approaches to problem solving will be emphasized. The course includes practical aspects of light, fluorescence and confocal microscopy as well as transmission and scanning electron microscopy. (Offered every other Fall semester.)

PATH.538 Immunopathology (3)

Prerequisites: BBS.501 and 502 or equivalent. Immunology pertaining to human diseases and animal models emphasized. (Offered occasionally.)

PATH.691 Molecular Pathobiology Journal Club (1)

Students and faculty present papers involving current issues in pathology.

PATH.692 Pathology Research Colloquium (1)

Students and faculty present their research.

PATH.693 Special Topics in Pathology (1-3)

PATH.695 Special Study for Examinations (0)

PATH.697 Research Topics (1-3)

Prior permission of professor and chairperson required.

PATH.698 Graduate Reading Course (1-3)

Prior permission of professor and chairperson required.

PATH.699 Dissertation Research (0-6)

PATH.6CR.99 Doctor of Philosophy Degree Study (0)

PHARMACOLOGICAL AND PHYSIOLOGICAL SCIENCE

Thomas C. Westfall, Ph.D.,
Department Chairperson

Mark M. Voight, Ph.D.
Vice-Chairperson

Joseph J. Baldassare, Ph.D.,
Graduate Program Director

The graduate program in the Department of Pharmacological and Physiological Science is designed to prepare students for a career in research and teaching in this area of biomedical science. The program combines formal coursework, advanced seminars, lab rotations and in-depth training in one of the laboratories of the Faculty. The Faculty available as mentors have diversified backgrounds in the fields of biochemistry,

molecular biology, neuroscience, pharmacology and physiology. Major areas for research specialization include neurotransmitter biochemistry, physiology and pharmacology; molecular biochemistry and molecular pharmacology of neurotransmitter, autacoid, neurohormone and hormone receptors and their signaling mechanisms; electrophysiology; neurochemistry; cardiovascular control mechanisms; molecular cellular and endocrine control mechanisms, neuropharmacology, and pharmacology of drugs of abuse.

Doctor of Philosophy

Prerequisites

Background in biology, chemistry (general and organic; physical chemistry recommended, but not required), physics, and mathematics (including calculus). Deficiencies in the background requirements may be made up early during graduate study if an applicant is otherwise acceptable for admission into the program.

Required Courses

BBS.501 Basic Biomedical Science I;
 BBS.502 Special Topics in Basic Biomedical Science I;
 BBS.503 Basic Biomedical Science II;
 BBS.504 Special Topics in Basic Biomedical Science II;
 PPY.511 Advanced Topics in Pharmacological and Physiological Science I;
 PPY.512 Selected Topics in Pharmacological and Physiological Science I;
 PPY.513 Advanced Topics in Pharmacological and Physiological Science II; and
 PPY.514 Selected Topics in Pharmacological and Physiological Science II.

Additional Requirements

BBS.592 Basic Biomedical Science Colloquium (two semesters);
 BBS.597 Introduction to Basic Biomedical Research (two semesters);
 PPY.680 Pharmacological and Physiological Science Seminar; and
 PPY.691 Pharmacological and Physiological Science Journal Club.

Participation and attendance required in the Seminar and Journal Club during entire tenure of residency, whether or not student is formally enrolled in them.

A formal minor at the Master's level is not permitted.

Additional Requirements for Doctor of Philosophy degree:

Competency in statistics; knowledge of ethical conduct of research and rotation through research laboratories during the first year.

Credit hours in preparation for preliminary examinations total 48 minimum if degree pursued directly from the baccalaureate.

A formal minor is not permitted.

COURSE DESCRIPTIONS

Graduate Courses

PPY.511 Advanced Topics in Pharmacological and Physiological Science I (4)

Prerequisite: Permission of Instructor. An intense course integrating pharmacology and physiology. Topics to be covered will include general principles of pharmacology and cell physiology and an in-depth, integrative study of the cardiovascular, renal, respiratory, gastrointestinal and autonomic nervous systems. (Offered every Fall semester.)

PPY.512 Selected Topics in Pharmacological and Physiological Science I (2)

Prerequisite: Permission of Instructor. A companion course to PPY.511. Course involves participation in small group exercises in problem solving, laboratory sessions and critical analysis of the current scientific literature in selected special topics that are related to the lecture topics in the co-requisite PPY.511 course. (Offered every Fall semester.)

PPY.513 Advanced Topics in Pharmacological and Physiological Science II (4)

Prerequisite: Permission of Instructor. An intense course integrating pharmacology and physiology. Topics to be covered will include an in-depth, integrative study of the physiology and pharmacology of the endocrine and central nervous systems, as well as an introduction to the physiology and pharmacology of cancer. (Offered every Spring semester.)

PPY.514 Selected Topics in Pharmacological and Physiological Science II (2)

Prerequisite: Permission of Instructor. A companion course to PPY.513. Course involves participation in small group exercises in problem solving, laboratory sessions and critical analysis of the current scientific literature in selected special topics that are related to the lecture topics in the co-requisite PPY.513 course. (Offered every Spring semester.)

PPY.595 Special Study for Examinations (0)

PPY.599 Thesis Research (0-6)

PPY.5CR.90 Master's Degree Study (0)

PPY.600 Pharmacological Principles of Human Therapeutics (2)

Prerequisite: Permission of instructor. Selected topics and readings in human therapeutics. (Offered occasionally.)

PPY.601 Pharmacology and Physiology of the Cardiovascular System (4)

Prerequisite: Permission of instructor. Represents current thinking and concepts of cardiovascular science. Special emphasis is placed on the various control systems in normal and pathophysiological conditions, as well as interactions of drugs and physiological concepts ranging from the molecular level to highly integrative systems. Meets two days a week for one semester. (Offered occasionally.)

PPY.655 Signal Transduction Mechanisms (4)

Prerequisite: Permission of instructor. This course covers the mechanisms of action of hormones, neuromodulators and drugs at the cellular, biochemical and molecular levels. The major classes of receptors, signal transduction pathways, and effector systems will be covered in a comprehensive manner. Historical breakthroughs as well as our current understanding of mechanisms will be examined. As an advanced graduate course, the methodology used to elucidate and evaluate these mechanisms will be stressed. Meets two days a week for one semester. (Offered occasionally.)

PPY.666 Pharmacology and Physiology of the Nervous System and Selected Topics in Neuropharmacology (4)

Prerequisite: Permission of instructor. This course represents current thinking and concepts involving the action of drugs on the nervous system. Special emphasis is placed on the function of neurotransmitters and neuromodulators in normal and pathophysiological conditions as well as the interaction of drugs and physiological concepts ranging from the molecular level to highly integrative systems. Meets two days a week for one semester. (Offered occasionally.)

PPY.680 Pharmacological and Physiological Science Seminar (0-1)**PPY.691 Pharmacological and Physiological Science Journal Club (0-1)****PPY.695 Special Study for Examinations (0)****PPY.697 Research Topics (1-3)**

Prior permission of guiding professor and department/program chairperson required.

PPY.698 Graduate Reading Course (1-3)

Prior permission of guiding professor and department/program chairperson required.

PPY.699 Dissertation Research (0-6)**PPY.6CR.99 Doctor of Philosophy Degree Study (0-1)**

School of Public Health

Homer H. Schmitz, Ph.D.,

Interim Collegiate Dean

The School of Public Health, founded in 1991, provides population-based graduate education, through two Master's and a Ph.D. degree program, that prepares students for private, voluntary, and public-sector careers in health services administration and research, health promotion, and disease prevention. Opportunities for dual-degree study exist with the University's Doisy College of Health Sciences, Business and Administration, Law, Medicine, Nursing, and Social Work. The School is composed of two departments, Community Health and Health Management and Policy, as well as a Doctoral Program in Public Health Studies.

COMMUNITY HEALTH

Terry Leet, Ph.D., M.P.H.,

Department Chairperson

The Department of Community Health offers the Master of Public Health (M.P.H.) professional degree with concentrations in Behavioral Science and Health Education, Biosecurity and Disaster Preparedness, Biostatistics, Environmental and Occupational Health, and Epidemiology. The Professional Option-Practice concentration is available for experienced health professionals who wish to work in public health practice. Joint concentrations in Biostatistics/Epidemiology, Environmental Health/Epidemiology, and Behavioral Science/Epidemiology are also offered. Dual-degree programs are available with the School of Social Service (MPH/MSW), the School of Nursing (MPH/Nurse Practitioner), the School of Law (MPH/JD), the School of Medicine (MPH/MD), and the Department of Nutrition and Dietetics (MPH/MS). All MPH degree programs require a practice experience. The Master of Science (MS) degree in Biosecurity and Disaster Preparedness is offered in a distance learning format. The Master of Science in Public Health (MSPH) degree with concentrations in Epidemiology and in Behavioral Science is offered for researchers with terminal degrees (including MD, DO, DC, DDS, DVM or PhD) who seek training in population based research methods to support their clinical research activities. The School of Public Health is accredited by the Council on Education for Public Health.

Master of Public Health

Prerequisites: See individual concentrations.

Required Core Courses (All Concentrations)

BSH.500 Behavioral Science and Public Health;

BST.500 Principles of Biostatistics

CMH.501 Foundations of Public Health Practice;

CMH.511 Managerial Aspects of Public Health Practice;

CMH.512 Leadership and Ethics for Public Health Practice;

CMH.592 Community Health Rounds

CMH.594 Practice Experience in Public Health

CMH.595 Special Study for Examinations;

EOH.500 Environmental and Occupational Health; and

EPI.500 Principles of Epidemiology

Immediately following successful completion of CMH.512, all MPH students will take an examination on the core material of the MPH. Acceptable performance on this examination is required to progress in the MPH program.

Behavioral Science and Health Education Concentration

Prerequisites

A bachelor's degree or the equivalent in a social or biomedical science, or a closely related discipline. Experience in health-related fields is highly valued.

Required Courses

Students must complete the core curriculum and these concentration courses:

BSH.510 Health Promotion Program Planning;

BSH.520 Historical, Philosophical and Political Bases of Public Health and Health Education;

BSH.531 Health Communication

BSH.540 Community Diagnosis;

BSH.600 Health Promotion Program Evaluation;

BSH.601 Research Methods in Behavioral Science; and

BSH.625 Capstone: Applying Theory in Research and Practice

At least six credit-hours of electives must be taken from the concentration offerings.

The minimum total credit-hours requirement: 48.

Biosecurity and Disaster Preparedness

Prerequisites

A bachelor's degree or the equivalent in a social or biomedical science, or a closely related discipline. Experience in health-related fields is preferred, but is not required..

Required Courses

Students must complete the core curriculum and these concentration courses:

BSDP.566 Fundamentals of Disaster Planning

BSDP.570 Public Health & Disasters

BSDP.572 Communicable Diseases & Infection Control

BSDP.573 Disaster Planning

BSDP.575 Epidemiological Methods & Infectious Disease Surveillance (substitutes for EPI.500)

BSDP.576 Disaster Communications & Media Relations

BSDP.578 Behavioral & Cultural Aspects of Disaster Response

BSDP.582 Disaster Management & Risk Analysis; and

BSDP.625 Capstone: Biosecurity Practicum

At least three credit-hours of approved electives must be taken.

The minimum total credit-hours requirement: 48.

Biostatistics Concentration

Prerequisites

A bachelor's degree with coursework that includes Calculus I, either Calculus II or linear algebra, introductory statistics, and basic coursework in the principles of biology and computer science. These requirements may be satisfied in the summer prior to the first fall semester.

Required Courses

The concentration in Biostatistics requires the completion of the core and these concentration courses:

(BST.500 is a pre-requisite, and if taken at Saint Louis University, counts as an elective)

BST.502 Theory of Biostatistics

BST.510 Introduction to General Linear Modeling;

BST.520 Survival Data Analysis;

BST.521 Categorical Data Analysis;

EPI.502 Epidemiology Methods II; and

BST.625 Capstone: Advanced Biostatistical Methods

At least twelve credit-hours of electives must be taken from the concentration offerings.

The minimum total credit-hours requirement: 48.

Environmental and Occupational Health Concentration

Prerequisites

A bachelor's degree in the physical, chemical, or biological sciences or six credit-hours of college level courses individually in chemistry, biology, and the physical sciences are recommended; however, applicants will be considered on an individual basis in the absence of these prerequisites.

Required Courses

Students must complete the core curriculum and the following courses in environmental and occupational health:

EOH.510 Human Toxicology and Environmental Health;

EOH.520 Evaluation of Environmental Hazards;

EOH.529 Environmental and Occupational Laboratory;

EOH.540 Human Health Risk Analysis;

EOH.530 Assessment and Control of Infectious and Biological Hazards;

EOH.560 Policy Science and Decisions in Environmental Health; and

EOH.625 Capstone: Cases in Environmental and Occupational Health.

At least six credit-hours of electives must be taken from the concentration offerings.

The minimum total credit-hours requirement: 48.

Epidemiology Concentration

Prerequisites

A bachelor's degree in a biomedical science, one of the social sciences or a closely related discipline. Experience in health-related fields is highly valued.

Required Courses

The concentration in epidemiology requires the completion of the core courses and these concentration courses:

BST.510 Introduction to General Linear Modeling;

BST.520 Survival Data Analysis;

BST.521 Categorical Data Analysis;

EPI.502 Epidemiology Methods II; and

EPI.625 Capstone: Advanced Epidemiology Methods.

At least twelve credit-hours of electives must be taken from the concentration offerings.

The minimum total credit-hours requirement: 48.

Joint Behavioral Science/Health Education and Epidemiology Concentration

Prerequisites

A bachelor's degree or the equivalent in a social or biomedical science or a closely related discipline. Professional experience in a health-related field is highly valued.

Required Courses

Students must complete the core curriculum and these concentration courses:

BSH.510 Health Promotion Program Planning;

BSH.531 Health Communication

BSH.540 Community Diagnosis;

BSH.600 Health Promotion Program Evaluation;

BSH.601 Research Methods in Behavioral Science;

BST.510 Introduction to General Linear Modeling; and

EPI.502 Epidemiology Methods II; and

BSH.625 Capstone: Applying Theory in Research and Practice

At least nine credit-hours of electives must be taken from the concentration offerings.

The minimum total credit-hours requirement is 54.

Joint Biostatistics and Epidemiology Concentration

Prerequisites

A bachelor's degree with coursework that includes Calculus I, either Calculus II or linear algebra, introductory statistics, and basic coursework in the principles of biology and computer science. These requirements may be satisfied in the summer prior to the first fall semester.

Required Courses

The joint concentration in Biostatistics and Epidemiology requires the completion of the core courses and these concentration courses:

(BST.500 is a pre-requisite, and if taken at Saint Louis University, counts as an elective)

BST.502 Theory of Biostatistics;

BST.510 Introduction to General Linear Modeling;

BST.520 Survival Data Analysis;

BST.521 Categorical Data Analysis;

EPI.502 Epidemiology Methods II; and

BST.625 Capstone: Advanced Biostatistical Methods

At least eighteen credit-hours of electives must be taken from the concentration offerings.

The minimum total credit-hours requirement: 54

Joint Environmental Health and Epidemiology Concentration

Prerequisites

A bachelor's degree in the physical, chemical, or biological sciences or six credit hours of college level courses individually in chemistry, biology, and the physical sciences are recommended; however, applicants will be considered on an individual basis in the absence of these prerequisites.

Required Courses

The joint concentration in Environmental Health and Epidemiology requires the completion of the core courses and these concentration courses:

(EOH.500 should be taken in the summer prior to the start of fall classes)

BST.510 Introduction to General Linear Modeling

EOH.510 Human Toxicology and Environmental Health;

EOH.520 Evaluation of Environmental Hazards;

EOH.540 Human Health Risk Analysis;
 EOH.550 Environmental and Occupational Epidemiology;
 EOH.640 Exposure Assessment Methodologies;
 EPI.502 Epidemiology Methods II; and
 EOH.625 Capstone: Cases in Environmental and Occupational Health.

At least nine credit-hours of electives must be taken from the concentration offerings.

The minimum total credit-hours requirement: 54.

Professional Option-Practice

Prerequisites

A Bachelor's or Master's degree in a health or related field and substantial and relevant experience equivalent to three years in public health or health care. Satisfaction of the experience requirement is determined by the Admissions Committee.

Required Courses

Each student must complete the core courses and the following:

EOH.570 Public Health and Disasters
 HMP.537 Organizational Behavior and Management
 HMP.550 Health Policy; and
 CMH.625 Capstone: Applications of Public Health Management

At least nine credit-hours of electives must be taken from approved courses.

The minimum total credit-hours requirement: 42.

Master of Science in Biosecurity and Disaster Preparedness

Prerequisite

A bachelor's degree in any discipline. Experience in health-related fields is preferred, but is not required.

Required Courses

Each student must complete the following:

BSDP.566 Fundamentals of Disaster Planning
 BSDP.570 Public Health and Disasters;
 BSDP.572 Communicable Diseases and Infection Control;
 BSDP.573 Disaster Planning;
 BSDP.575 Epidemiological Methods and Infectious Disease Surveillance

BSDP.576 Disaster Communications and Media Relations
 BSDP.578 Behavioral & Cultural Aspects of Disaster Response

BSDP.582 Disaster Management and Risk Analysis;
 BSDP.583 Legal and Ethical Implications of Disasters; and
 BSDP.625 Capstone: Biosecurity Practicum

At least three credit-hours of electives must be taken from approved courses.

The minimum total credit-hours requirement: 42.

Certificate in Biosecurity and Disaster Preparedness

Prerequisites

A bachelor's degree in any discipline. Experience in health-related fields is preferred, but is not required.

Certificate may be completed concurrently with a MPH degree.

Required Courses

BSDP.566 Fundamentals of Disaster Planning
 BSDP.570 Public Health and Disasters;
 BSDP.572 Communicable Diseases and Infection Control;
 BSDP.573 Disaster Planning; and
 BSDP.582 Disaster Management and Risk Analysis;

The minimum total credit-hours requirement: 15.

Master of Science in Public Health (MSPH) in Behavioral Science

Prerequisite

A doctoral degree (e.g., M.D., PhD) in the field of health or a health-related social science. In the case of a medical degree, full eligibility for medical licensure in the United States is required.

Required Courses

Each student must complete the following:

BSH.500 Behavioral Science and Public Health;
 BSH.600 Health Promotion Program Evaluation;
 BSH.601 Research Methods in Behavioral Science;

BSH.625 Capstone: Applying Theory in Research and Practice;

BST.500 Principles of Biostatistics;

BST.510 Introduction to General Linear Modeling;

BST.540 Applied Data Management;

CMH.502 Ethical Issues in Public Health or HMP.542 Health Care Ethics in a Pluralistic Society ;

CMH.595 Special Study for Examinations;

CMH.596 Research Project/Essay Guidance;

EPI.500 Principles of Epidemiology; and

HMP.500 Health Care Organization or CMH.501 Foundations of Public Health Practice.

At least six credit-hours of electives must be taken from approved courses.

The minimum total credit-hours requirement: 36

Master of Science in Public Health (MSPH) in Epidemiology

Prerequisite

A doctoral degree (e.g., M.D., PhD) in the field of health or a health-related social science. In the case of a medical degree, full eligibility for medical licensure in the United States is required.

Required Courses

Each student must complete the following:

BST.500 Principles of Biostatistics;

BST.510 Introduction to General Linear Modeling;

BST.540 Applied Data Management

CMH.502 Ethical Issues in Public Health or HMP.542 Health Care Ethics in a Pluralistic Society ;

CMH.595 Special Study for Examinations;

CMH.596 Research Project/Essay Guidance;

EPI.500 Principles of Epidemiology

EPI.502 Epidemiology Methods II;

EPI.625 Capstone: Advanced Epidemiology Methods; and

HMP.500 Health Care Organization or CMH.501 Foundations of Public Health Practice.

At least twelve credit-hours of electives must be taken from approved courses.

The minimum total credit-hours requirement: 36.

Dual-Degree Programs

Master of Public Health/ Master of Science in Nursing Family Nurse Practitioner

The dual degree program is designed for students who wish to study concurrently for the Master of Public Health (MPH) degree and the Master of Science in Nursing - Family Nurse Practitioner (70 or 76 credit hours depending on whether the MSN thesis option is selected) degree at Saint Louis University. The MPH program is a professional degree program aimed at providing formal training in general and comprehensive aspects of public health. Applicants must fulfill all of the admission requirements for both the School of Public Health and the School of Nursing.

Master of Public Health/ Master of Social Work

The dual degree program is designed for students who wish to study concurrently for the Master of Public Health (MPH) degree and the Master of Social Work (MSW) degree at Saint Louis University (a total of 78 credits). The Saint Louis University School of Social Work is accredited by the Council on Social Work Education. Graduates of the degree program are prepared to take positions in a variety of social service and health care settings. Applicants must fulfill all of the admission requirements for both the School of Public Health and the School of Social Work.

Master of Public Health/ Master of Science in Nutrition and Dietetics

This dual degree program is offered with the Department of Nutrition and Dietetics within the Doisy College of Health Sciences (a total of 54 credits). The purpose of this program is to prepare nutrition specialists to work in many types of public health and voluntary agencies, as well as in medical care and educational settings. Students specialize in public health and dietetics, learning to plan, organize, conduct and evaluate nutrition programs in the public health sector. Applicants must fulfill all of the admission requirements for both the School of Public Health and the Department of Nutrition and Dietetics in the Doisy College of Health Sciences, which includes a prerequisite undergraduate degree in Nutrition/Dietetics or completion of prerequisite courses in Basic Nutrition, Biochemistry, Advanced Nutrition, and Medical Nutrition Therapy.

Master of Public Health/ Juris Doctor

The Master of Public Health/Juris Doctor dual degree program is offered in collaboration with the Saint Louis University School of Law, which is accredited by the American Bar Association (a total of 115 credits). The purposes of the program are to provide persons entering the health law field with additional training in public health and to expand advanced education in law and public health through Missouri and the surrounding region. Graduates will practice law in a variety of settings including governmental public health agencies, private law firms, and nonprofit institutions. Applicants must fulfill all admissions requirements for the MPH degree program and the School of Law to gain admission to the dual degree program.

Master of Public Health/ Doctor of Medicine

The MPH/MD dual degree program at the Saint Louis University Health Sciences Center is conducted under the joint auspices of the Schools of Public Health and Medicine. This integrated program requires completion of professional medical-school requirements as well as general and comprehensive aspects of a public health education. Graduates of the program have broadened career options and are able to draw from both sets of credentials as they practice from a foundation of interdisciplinary preparation. Individuals may apply to the MPH degree program concurrently with application to medical school or following their admission to the School of Medicine; however, admission to the dual degree program is contingent upon admissions to both the MPH and the M.D. degree programs.

Master of Science in Public Health/Ph.D. in Clinical Psychology

The 6-year combined program is designed to develop scientist-practitioners of clinical psychology who can conduct research, design and evaluate programs, and inform public policy in academic research settings, health care facilities, and public health organizations. Applicants are required to be initially accepted to the graduate degree program in clinical psychology. The student must then apply for and fulfill all admission requirements for the MPSH degree program in order to gain admission to the dual degree program.

Graduate Courses

BSH.500 Behavioral Science and Public Health (3)

This course introduces concepts, theories and methods employed by behavioral scientists to develop, plan, implement and evaluate public health interventions. Selected theories of health behavior are presented. Principles of program evaluation methodology are introduced. Emphasis is placed on the application of theory and culturally appropriate methods to the design and assessment of approaches to solving current public health problems. (Offered each semester.)

BSH.510 Health Promotion Program Planning (3)

Prerequisite: BSH.500 or permission of Instructor. Following general logic model frameworks and the PRECEDE-PROCEED planning model, this course explores the principles, theories, and essential steps of the health promotion planning process. Content includes a detailed review of the methods used in this planning model. In this course, the process and methods of evaluation are framed in terms of "quality assurance," that is, documenting the extent to which program actions are implemented in accordance to stated objectives. (Offered annually.)

BSH.520 Historical, Philosophical and Political Bases of Public Health and Health Education (3)

Prerequisite: BSHE Concentrator or permission of Instructor. This course engages students in critical thinking and discussion about the conceptual bases of public health and health education, including the philosophical and political ideologies which have shaped research and practice in both fields. Students completing this course will be able to critically consider public health programs and policies. (Offered annually.)

BSH.531 Health Communication: Theory and Practice (3)

Prerequisite: BSHE Concentrator or permission of Instructor. This course provides an overview of theory and research on persuasive communication, emphasizing the application of persuasive communication principles to health education practice. Special emphasis is given to the application of new communication technologies to meet public health objectives. Students successfully completing this course will be able to analyze and critique health education and health promotion messages on the basis of theory and empirical research, and identify basic principles of persuasive communication which are applicable to health education practice. (Offered annually.)

BSH.532 Audience Research Methods in Health Communication (3)

Prerequisite: BSH.500 or permission of Instructor. The course will prepare students to conduct audience segmentation and analysis for public health communication programs. Students will learn: 1) the rationale, principles and goals of audience segmentation; 2) specific methods for gathering audience data; and 3) how to translate audience data and segmentation strategies into a communication plan. (Not currently offered.)

BSH.533 Persuasion, Message Design and Customization (3)

Prerequisite: BSH.532 or permission of Instructor. The course aims to introduce students to persuasion theories, and to prepare students to develop health communication programs customized to specific population subgroups or individuals. On completion of the course each student will be able to design messages for public health programs, accounting for relevant theories and evidence. (Not currently offered.)

BSH.534 Dissemination and Evaluation Strategies (3)

Prerequisite: BSH.533 or permission of Instructor. The course aims to introduce students to theories and practices related to dissemination and evaluation for health communication programs. On completion of the course each student will be able to plan, develop, and assess dissemination and evaluation strategies in public health programs, accounting for the evidence base (Not currently offered.)

BSH.535 Media Strategies for Health Professionals (3)

Prerequisite: BSH.500 or permission of Instructor. The course aims to introduce students to a range of theories and practices related to media and dissemination that inform health programs and behavior. On completion of the course each student will be able to plan, develop, and assess media and dissemination strategies in public health programs, accounting for the evidence base for relevant social and behavioral conditions. (Not currently offered.)

BSH.540 Community Diagnosis (3)

Prerequisite: BSH.C500 or permission of Instructor. This course reviews the theoretical bases underlying community diagnosis and community organizing, provides students with the opportunity to develop specific skills in community diagnosis, and assists in assessing the personal and professional challenges faced when working in diverse communities. (Offered annually.)

BSH.594 Internship in Behavioral Science and Health Education (0)

Prerequisite: Permission of Internship Coordinator. This course provides supervised experience in application of community health techniques through work in a public health agency or other health care organization. (Not currently offered. All MPH students take CMH.594.)

BSH.597 Research Topics in Behavioral Science and Health Education (1-3)

Prerequisite: Permission of Instructor. This course provides direct research experience in behavioral science and health education. Content is developed jointly between the student(s) and a faculty mentor.

BSH.598 Graduate Reading Course in Behavioral Science and Health Education (1-3)

Prerequisite: Permission of Instructor. This course provides specialized study in behavioral science and health education to enhance skills in literature review and problem solving. Content is developed jointly between the student(s) and a faculty mentor.

BSH.600 Health Promotion Program Evaluation (3)

Prerequisite: BSH.500 or permission of Instructor. The course focuses on principles and procedures to evaluate health promotion and disease prevention programs. Evaluation design, reliability and validity, formative and process evaluation, and meta-analysis are introduced. The course includes intensive critique of case studies from the disease prevention program and policy literature. Case studies designed to reflect the diversity of methods and the range of possible applications are selected. (Offered annually.)

BSH.601 Research Methods in Behavioral Sciences (3)

Prerequisite: BSH.500 or permission of Instructor. This course provides an overview of selected methods used in conducting behavioral science research. The course will address all methodological aspects of behavioral science research, with an emphasis on data collection methods and survey research. (Offered annually.)

BSH.602 Intervention Research (3)

Prerequisite: BSH.600 or 601, or permission of Instructor. This course helps students conceptualize, design, and conduct behavioral intervention research in public health. Students are introduced to intervention research projects conducted to address a wide range of health problems and populations in community, health care, work-site and school settings. Students evaluate and critique these interventions in terms of research design and methodology, planning approach, and adherence to principles of participation. Students will design intervention-research projects to address a public-health problem of their choice. (Offered as needed.)

BSH.603 Applying Theory in Research and Practice (3)

Prerequisite: BSHE concentrator or permission of Instructor. Theory is a fundamental conceptual tool in the design and assessment of public health programs. Students will learn to critically assess relevant theories and evidence in relation to specific public health problems, and will be trained in the application of theory to inform and benefit program planning, development, implementation, and evaluation. (Offered annually.)

BSH.610 Community Analysis, Organization and Change (3)

Prerequisite: BSH.500 or permission of Instructor. This course surveys principles and models underpinning community-based health promotion initiatives. Qualitative and quantitative approaches to needs assessment and community analysis are introduced. Literature is reviewed on citizen participation, empowerment, self-help, coalitions, dissemination of validated program models, and related issues of community organization applied to health problems. The course features student analysis of prominent community-based research and demonstration projects. (Not currently offered.)

BSH.611 Health Behavior Assessment (3)

Prerequisite: BSH.500 or permission of Instructor. The purpose of this course is to review research and theory guiding the assessment of selected health behaviors; to integrate behavioral and physiological sciences in conducting health behavior assessments; and to emphasize assessment as a core component of the scientific approach to the development and implementation of public health interventions. The course will promote skills necessary to critically evaluate methods used to assess health behaviors from a variety of theoretical perspectives applied to health promotion and risk behavior prevention. (Not currently offered.)

BSDP.561 Biosecurity and Safety for Laboratories (3)

This course reviews the use and handling of biological materials in research and clinical laboratories in which there is potential for exposure to infectious agents. Particular attention will be placed on the use of live viruses where there is a need for extreme caution because they frequently cause animal and human diseases. (Offered annually.)

BSDP.562 Bioterrorism and Emerging Infectious Diseases (3)

This course introduces bioterrorism and emerging infectious diseases, including the rationale for using biological weapons, genetic engineering, and surveillance. Disease transmission simulation and patient moulage will be used. Emerging infectious diseases (SARS, avian influenza, TB, MRSA, Mumps and Pertussis), anti-infective therapy and vaccine, and pandemic planning will also be covered. (Offered annually.)

BSDP.563 Global Terrorism in the 21st Century (3)

This course provides a comprehensive review of the global threat posed by the growth of violence in fundamentalist movements with a focus on violent Islamic fundamentalism (VIF) and its implications for public health security and preparedness. A historic overview of Islamic fundamentalism that traces its evolution, motivation, recruiting strategies, funding sources, and spread from the Mid East to Asia, Africa, Malaysia, the Philippines, and South America will be covered. The course will also explore the relationship of the Arab-Israeli conflict to the propagation of VIF. The history, geopolitical motivations of state sponsorship, intra-organizational relationships, leadership and current technical capabilities of Hamas, Hezbollah, and al Qaida will also be reviewed. (Offered annually)

BSDP.564 Public Health and Medical Intelligence (3)

This course introduces students to the rationale for the emerging role of the public health and medical communities in the intelligence gathering, analysis and dissemination process. Focusing on early detection of emerging physical threats and novel/emerging infectious diseases it will give the students the requisite knowledge and skills to provide the homeland security community with threat indications and warnings. Students will be given the analytical tools to allow them to gauge the impact of physical threats that would result in mass casualties and novel/emerging infectious diseases. They will be expected to develop and recommend rational and viable courses of action to those threats. (Offered annually.)

BSDP.565 Threat Characterization and Response Using Statistics Decision Analysis Tools (3)

This course provides the basic practical tools for analyzing a threat scenario using problem-based learning of standard statistical methods, culminating in application of those methods in decision analysis for informing policy makers of threat prioritization and the means to mitigate those threats as applied specifically to the general category of bioterrorism problems. (Offered annually.)

BSDP.566 Fundamentals of Disaster Planning (3)

This course provides an overview of strategies for and challenges to planning for all types of disasters. All phases of the emergency management model will be addressed: mitigation, preparation, response, and recovery. Content includes tools and resources needed to develop and/or evaluate a facility or community all-hazards response plan and create exercises to test this plan. (Offered annually.)

BSDP.570 Public Health and Disasters (3)

Introduces the growing threat and potential public health consequences of all types of disasters. Content includes an introduction to public health and public health's role in disaster preparedness and response. In this course, threats to public health are introduced. Intentional disasters (chemical, biological, and radiological terrorism) & natural disasters are covered; emphasis is placed on infectious disease emergencies such as biological terrorism and emerging infections. (Offered annually.)

BSDP.571 Terrorist Organizations and Their Motivations (3)

This course is designed to provide students a broad understanding of terrorist organizations and their motivations. History of terrorism, current movements and organizations (both domestic and international) will be covered. Emphasis will be placed on terrorist use of chemical/biological/radiological/nuclear weapons of mass destruction. (Offered annually.)

BSDP.572 Communicable Diseases & Infection Control (3)

This course teaches the fundamentals of communicable diseases. Content includes this microbiology of contagious pathogens, disease transmission, and infection control measures to prevent or stop the spread of communicable diseases. Emphasis is placed on the pathogens that are likely to be used in a bioterrorism attack and new or re-emerging infectious diseases. (Offered annually.)

BSDP.573 Disaster Planning for Infectious Disease Disasters (3)

This course provides an overview of strategies for and challenges to planning for infectious disease disasters, such as bioterrorism and pandemics. Unique challenges to infectious disease disasters will be addressed, including isolation, quarantine, and pharmacological interventions. Content includes tools and resources needed to develop and/or evaluate a facility or community all-hazards response plan and create exercises to test this plan. (Offered annually)

BSDP.574 Epidemics and Other Disasters (3)

This course is a survey of the potential impact of disasters on contemporary society, with emphasis placed on emerging, highly communicable, essentially untreatable diseases. Content includes the medical, social, economic, and political consequences of historically significant epidemics and the complexities of managing and recovering from a highly lethal pandemic. This course will review past epidemics and pandemics, such as the Black Plague of the Middle Ages, the effects of the 15th Century introduction of smallpox in the Americas, the 1918-19 influenza pandemics, Hoof and Mouth disease in Great Britain, hantavirus, and SARS. Chernobyl, Bhopal, and Hurricane Katrina will also be studied. Students are expected to apply historical data to contemporary epidemic simulation and planning efforts. (Not currently offered.)

BSDP.575 Epidemiological Methods and Infectious Disease Surveillance (3)

Prerequisite: EOH.572. Through audio lectures and readings, this course will present the student with the descriptive and analytic tools of epidemiology and surveillance. The student will analyze a data set using the epidemiological software package Epi Info. Students will participate in weekly internet discussions and analysis of problem sets. (Offered annually.)

BSDP.576 Disaster Communications and Media Relations (3)

This course will provide an overview of crisis communication challenges associated with disasters, including basic human communications and communication needs, the impact of stressors in communications, risk communications to communities and to crisis responders, command and control, publicly accepted crisis communication techniques, and the technologies related to crisis communications. Students will learn the theoretical foundations of risk communication, how to apply those principles during a public health crisis, and how to formulate and institute appropriate communications plans for a variety of audiences and disaster response organizations. (Offered annually.)

BSDP.577 Biosecurity and Risk Assessment (3)

Students will, through directed readings, guided discussions and participation in risk assessment exercises, gain the ability to participate in the risk assessment process to enhance the health, safety and environmental security of their community, its critical infrastructures and commercial and residential buildings. Using the rubric of risk analysis, the course engages its participants to consider the risk that state sponsored, postmodern jihadist or domestic terrorists may obtain and use biological, chemical or radio-nuclear weapons against vulnerable civilian populations. Course participants will gain an understanding of the process of developing actionable intelligence that can be used by the public health, medical and public safety communities to reduce risk and enhance the biosecurity planning, response, mitigation, and recovery process. (Not currently offered.)

BSDP.578 Behavioral and Cultural Aspects of Disaster Response (3)

This course examines the behavioral and cultural aspects that influence response to terrorism and other disasters. Students will study a range of responses to catastrophic events. Cultural and psychosocial sources of resilience to terrorism will be reviewed. (Offered annually.)

BSDP.579 Fundamentals of Management During an Emergency (3)

This course will introduce the learner to a basic understanding of disaster management for disasters resulting either naturally or terrorist initiated. This course is designed to provide the learner with information on the background, components, and systems involved in the management of disasters and other emergencies. Current practices, strategies, and important players involved in disaster management will be presented. The response to disasters involves politics and public leaders. The course will examine how leaders deal with the strategic challenges they face, the political risks and opportunities they encounter, the errors they make, the pitfalls they need to avoid, and the paths away from crisis they may pursue. The course will also examine what crisis leadership is and why effective crisis leadership requires organizations that are effective and the organizations require effective leaders. (Not currently offered.)

BSDP.581 Biosecurity Practicum (3)

Prerequisite: All other courses must be completed before enrolling in the Practicum, unless the student has special permission from the Program Associate Director or Director. Students may enroll in the Practicum during their final semester, even if they are taking another course(s) at the same time. This course is the capstone project from the Biosecurity and Disaster Preparedness programs. Students will demonstrate the skills of interdisciplinary planning and consequence management needed to respond to a bioterrorist event or naturally occurring epidemic. Students will develop an exercise using an infectious disease scenario. (Offered every semester.)

BSDP.582 Disaster Management & Risk Analysis (3)

This course will give the student an overview of the importance of biosecurity and the performance of vulnerability and risk assessments. It will also teach them the skills necessary to be a competent manager/leader during an emergency. Management case studies will be used to help students identify limits to their knowledge and to help them recognize when they need to obtain additional resources. (Offered annually)

BSDP.583 Legal & Ethical Implications of Disasters (2)

Students will examine the legal and ethical implications of disaster management. Elements of public health law and the principles of ethics will be covered. Students will apply ethical principles and public health laws to disaster planning and response scenarios through case studies and disaster simulations. (Not currently offered.)

BSDP.584 Advanced Topics in Infectious Diseases (3)

Prerequisite: EOH-572 Students will be introduced to nidal epidemiology that evaluates diseases through understanding their natural characteristics. Methods of disease introduction will be covered in relation to disease protection. The students will review the manner in which diseases can become clinically apparent. In contrast to the natural diseases, the students will look at the method of deployment, potential presentation, and control of diseases produced by human engineering. (Offered annually.)

BSDP.586 Preparing for Disaster: Resiliency and Stress Inoculation (3)

While many private and public agencies have some sort of disaster response plan, few take into account the mental and emotional ramifications of disaster upon general and vulnerable populations. This course will investigate the use of resiliency and stress inoculation before disasters to lessen disaster impact and encourage effective and prompt recovery. (Offered annually.)

BSDP.587 Facing the Challenge of International Bioterrorism (3)

This course will examine bioterrorism – the hostile infliction of disease, and how National and Global governance should manage the challenges it raises. The issue will be addressed from a variety of perspectives including: political, legal, medical and public health, with a special focus on international cooperation in dealing with bioterrorism. (Offered annually.)