

(26) College of Medicine

2008 - 2009

College of Medicine 1

Biostatistics and Epidemiology

26BE761

Special Topics -- Biostatistics in Research

Seminars or tutorial sessions dealing with special topics in biostatistics related to research and application basic to field of environmental health. Credit Level: G. Credit Hrs: 1.00-15.00

26BE762

Applied Longitudinal Data Analysis

The methodology of general linear mixed models (GL MM) using SAS is presented in detail. Example data sets are analyzed using PROC MIXED. Course content includes applied aspects of model building using RANDOM & REPEATED statements, comparisons of covariance structures for analyzing. Credit Level: G. Credit Hrs: 3.00

26BE763

Special Topics - Pediatric Environmental Health

See 26BE761. Credit Level: G. Credit Hrs: 1.00-15.00

26BE764

Statistical Genetics I: Principles and Methods

First of 2 part course. Students should be able to learn the basic principle of statistical inference in relation to the biological features of genetic data and relevant distributional properties of such data. Part 2 26BE765 Credit Level: G. Credit Hrs: 3.00

26BE765

Statistical Genetics II: Segregation and Linkage Analyses

Second of 2 part course. Students should be able to learn the principles of conducting quantitative analyses of data for determining the mode of inheritance and localization of genes underlying a familial trait. Part 1 26BE764 Credit Level: G. Credit Hrs: 3.00

26BE766

Principles of Clinical Trials

Scientific, regulatory, managerial, and dissemination aspects of clinical trials, including: types and quality of trial design, pros and cons of experimental vs management trials, randomization, rationale and implementation of masking strategies, sample size estimation and subject/clinical consent. Prereq: 26BE787. Credit Level: G. Credit Hrs: 3.00

26BE767

Scientific Integrity

Lecture series addressing ethical issues in research including of human experimentation, animal welfare, conflict of interest, and responsible authorship and publication practices. Course equivalent is 26 GNTD 730. Credit Level: G. Credit Hrs: 1.00

26BE768

Decision Analysis and Cost-effectiveness Analysis

Introduction to methods and applications of decision analysis, cost-effectiveness, and cost-benefit analysis in medical decision making. Bayes Theorem, diagnostic test, design assessment and economic analysis of health care programs. Credit Level: G. Credit Hrs: 3.00

26BE769

Special Topics - Epidemiology - Quality Improvement & Patient Safety

See 26BE766. Credit Level: G. Credit Hrs: 1.00-15.00

26BE770

Survey and Qualitative Methods for Health Research

Students learn concepts, methods, and practical procedures for locating, evaluating, and implementing health survey instruments to answer research questions. Other items of study are: questionnaire design and construction, intro to scale construction, methods for testing psychometric properties of instruments, and scaling methodologies. Credit Level: G. Credit Hrs: 2.00

Biostatistics and Epidemiology

26BE771

Introduction to Genome Science

Prereq: Molecular Biology. Will allow students exposed to general research areas in genome science, a study of the structure, content, and evolution of genomes. Core concepts and methodologies will be presented. Credit Level: G. Credit Hrs: 3.00

26BE776

Introduction to Epidemiology

Methodology for studies of disease in human populations. Examples include chronic disease, infectious disease, occupational and environmental epidemiology. Sources, collection, handling, interpretation of health data. Credit Level: G. Credit Hrs: 3.00

26BE777

Non Linear Statistical Analysis

Methods will be discussed for performing analysis of variance on data which include missing values. The technique will include quick approximate methods, exact methods and reliable computer programs. Credit Level: G. Credit Hrs: 3.00

26BE778

Introduction to SAS Programming

This course includes the use of SAS and other statistical packages as well as instruction in data management for epidemiologists and biostatisticians. Credit Level: G. Credit Hrs: 2.00

26BE779

Human Genome Diversity

Prereq: Basic Human/Pop. Genetics. Students should be able to understand the concept of interindividual variation at the genome level & how this relates to studies on evolution of modern human, global migration of human populations, and to natural history of disease causing mutations. Credit Level: G. Credit Hrs: 3.00

26BE784

Seminar of the Epidemiology of Infectious Diseases

Epidemiologic, serologic and public health aspects of modern infectious diseases, their transmission and methods of control. Credit Level: G. Credit Hrs: 2.00

26BE787

Introduction to Biostatistics

Descriptive statistics, probability distributions, estimation, types of error, significance level, test of hypotheses, sample size, correlation, linear regression, non-parametric methods. Emphasizes practical-applied aspects. Credit Level: G. Credit Hrs: 4.00

26BE788

Regression Analysis

Linear regression, least squares, elementary matrix operation, multiple regression models, correlation analysis, and introductory analysis of variance. Prereq: 26BE787. Credit Level: G. Credit Hrs: 4.00

26BE789

Experimental Design

Study of the applications of randomized block, Latin square, and factorial designs for scientific experimentation including confounding, fractional factorial. Fixed, random, mixed designs. Prereq: 26BE787. Credit Level: G. Credit Hrs: 4.00

26BE790

Computational Functional Genomics

Introduce students to mathematical & statistical models & concepts underlying current approaches to computational analysis of functional genomics & proteomics data. Credit Level: G. Credit Hrs: 3.00

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Biostatistics and Epidemiology**26BE793****Statistics of Bioassay**

Study of the statistical methods of parallel line, slope ratio, probit, logit and other bioassay techniques. Quantitative and quantal bioassays.

Credit Level: G. Credit Hrs: 3.00

26BE794**Survey Sampling**

Study of the applications of simple random, stratified, cluster, systematic, multistage, ratio, regression sampling techniques;

minimization of costs. Credit Level: G. Credit Hrs: 3.00

26BE795**Nonparametric Statistics**

Study of estimation and hypothesis testing with minimal assumptions. Includes the study of rank tests and other distribution-free statistics.

Credit Level: G. Credit Hrs: 3.00

26BE796**Introduction to Statistics**

Descriptive statistics, probability, estimation, statistical errors, parametric and nonparametric hypothesis testing, statistical fallacies.

Emphasizes applied-practical aspects. Less material covered than in 787. Credit Level: G. Credit Hrs: 4.00

26BE797**Categorical Data Analysis & Logistic Regression Analysis**

Statistical methods for analyzing discrete categorical and qualitative data are presented including Chi-square, Mantel Haenszel, McNemar's test, PMR, SMR. Credit Level: G. Credit Hrs: 3.00

26BE798**Survival Analysis**

Nonparametric and parametric methods of estimating and comparing survival functions for mortality studies including Kaplan-Meier, Weibull, exponential model, Cox regression. Credit Level: G. Credit Hrs: 3.00

26BE799**Applied Multivariate Analysis**

Extension of univariate tests in normal populations to the multivariate case with a review of matrix algebra, Hotellings T, Wilks Lambda, Discriminant analysis. Credit Level: G. Credit Hrs: 3.00

26BE804**Biostatistical and Epidemiological Consultation**

Biostatistical and Epidemiological Consultation preceptorship (offers one-on-one consultation to other University personnel). Credit Level: G. Credit Hrs: 1.00-3.00

26BE805**Biostatistical and Epidemiological Consultation**

See 26BE804. Credit Level: G. Credit Hrs: 1.00-3.00

26BE806**Biostatistical and Epidemiological Consultation**

See 26BE804. Credit Level: G. Credit Hrs: 1.00-3.00

26BE810**Laboratory Technologies in Genome Research**

Advanced course for the students who are interested in the common & novel laboratory technologies that are currently used in genomics research. Principle of the technologies & their major applications will be presented along with examples of research projects where those technologies were employed. Credit Level: G. Credit Hrs: 3.00

26BE828**Epidemiology and Biostatistics Division Seminar**

Seminars presented by the faculty and students presenting subjects of interest in epidemiology and biostatistics. Current research by speaker as well as review of the literature. Credit Level: G. Credit Hrs: 1.00

26BE829**Epidemiology and Biostatistics Division Seminar**

See 26BE828. Credit Level: G. Credit Hrs: 1.00

Biostatistics and Epidemiology**26BE830****Epidemiology and Biostatistics Division Seminar**

See 26BE828. Credit Level: G. Credit Hrs: 1.00

26BE842**Neuroepidemiology**

Neuroepidemiology is the investigation of the distribution and dynamics of neurologic disease in free ranging human populations. This course explores the scope and methods of neuroepidemiology. Prereq:

26BE776. Credit Level: G. Credit Hrs: 3.00

26BE861**Teaching Practicum in Biostatistics/Epidemiology Environmental Medicine**

Teaching practicum in epidemiology and/or biostatistics. Practice of assisting and teaching in environmental courses by special arrangement with faculty member who will provide supervision.

www.eh.uc.edu Credit Level: G. Credit Hrs: 1.00-3.00

26BE862**Introduction to Medical Informatics**

Introduction to the field of health informatics and its relation to patient care and clinical research. Topics include: field overview, clinical informatics, data standards, security and confidentiality, regional health information exchange, standards/terminologies, databases, internet/intranet and healthcare. Credit Level: G. Credit Hrs: 3.00

26BE863**Special Topics Biostatistics - Proteomics and Wavelets**

See 26BE761. Credit Level: G. Credit Hrs: 1.00-15.00

26BE864**Advanced Statistical Methods in Biomedical Research**

New methods of analyzing complex data constantly evolve and the purpose of this course is to expose these methods to graduate students. The methods are culled mostly from research journals and as such no textbook is prescribed for this course. Prereq: 26BE787. Credit Level: G. Credit Hrs: 3.00

26BE865**Special Topics Biostatistics - Statistical Genetics on R**

See 26BE761. Boosting and bagging are two of the most recent techniques available in the literature to enhance quality of prediction in data analysis. Credit Level: G. Credit Hrs: 1.00-15.00

26BE866**Molecular Epidemiology Laboratory**

Teaches students about molecular techniques used to assess DNA, RNA, & protein for markers of Expos ure & markers of disease state and susceptibility. Will rotate through a minimum of 5 labs and will learn basic research projects & basic techniques in host labs, critical to ongoing evaluations. Coreq: 26BE973. Credit Level: G. Credit Hrs: 1.00

26BE867**Health Services Research**

Research on effects of the organization, delivery, and financing of healthcare. Principles of health services research, including patterns of resource utilization, small area variation, medical errors, and measurement and improvement of quality of care will be emphasized.

Credit Level: G. Credit Hrs: 3.00

26BE868**Genetics of Complex Diseases**

Introduction to complex disease and traits. Epidemiology and genetic basis of complex diseases. Credit Level: G. Credit Hrs: 3.00

26BE869**Study Design and Analysis**

Seminars or tutorial sessions dealing with special topics in epidemiology related to research and application basic to field of environmental health. Prereq: 26BE776, 26BE787. Credit Level: G. Credit Hrs: 3.00

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Biostatistics and Epidemiology**26BE870****Global Environmental Epidemiology**

See 26BE766. Credit Level: G. Credit Hrs: 1.00-15.00

26BE871**Logistic Regression and Log Linear Models**

Analysis of discrete data using logistic and loglinear models including interpretation of coefficients and model-building strategies. Familiarity with SAS software through examples will be emphasized. Credit Level: G. Credit Hrs: 3.00

26BE874**Classic Topics in Epidemiology**

Study of historical works in epidemiology including Snow, Panum, Goldberger, and comparison with recent epidemiologic research. Credit Level: G. Credit Hrs: 2.00

26BE879**Epidemiology of Occupations**

Methodology and results of epidemiological studies of occupations including morbidity and mortality. Real examples and practical factors are considered. Prereq: 26BE776. Credit Level: G. Credit Hrs: 3.00

26BE884**Use of Statistical Procedures in Computer Package Programs**

The computer package programs SAS and BMDP contain an extensive array of statistical procedures, and a selection of the more useful and popular ones will be examined. The underlying theory, program statements, output, and application to real biomedical data sets will be discussed. Credit Level: G. Credit Hrs: 3.00

26BE887**Statistical Methods in Epidemiology**

Statistical methods for occupational and environmental health studies are reviewed, including case-control, cohort logistic regression, log-linear, matching. Credit Level: G. Credit Hrs: 3.00

26BE892**Pharmacoepidemiology**

Discussions with review of epidemiologic studies around a theme, e.g., environmental- or reproductive- or AIDS-related epidemiology for students who have completed the introductory course. Prereq: 26BE776. Credit Level: G. Credit Hrs: 2.00

26BE893**Advanced Epidemiology - Appraisal of Epidemiological Studies and Clinical Trials**

Sophisticated epidemiologic seminar review along a theme, e.g., the epidemiologic basis of standard; setting for students who have completed at least two other courses in epidemiology. Credit Level: G. Credit Hrs: 2.00-4.00

26BE894**Structural Equation Modeling**

Path analysis, measurement error models; confirmatory factor analysis; general structural equation model with latent variables; alternative estimators and models for categorical data. Credit Level: G. Credit Hrs: 3.00

26BE897**Epidemiology of Cardiovascular Diseases**

An introduction to epidemiology of the major cardiovascular diseases with a focus on risk factors. Prereq: 26BE776. Credit Level: G. Credit Hrs: 3.00

26BE898**Epidemiology of Cancer**

A general overview of known associations of environmental and occupational factors with various types of cancer; includes discussion of types of studies that give rise to associations and causation. Each student selects either a particular etiology or cancer site for a report to the class. Credit Level: G. Credit Hrs: 3.00

Biostatistics and Epidemiology**26BE961****Meta Analysis**

History of Meta-Analysis, searching literature, computation of effect sizes, pooling sizes, summary of data meta-regression; individual patient data (IPD) meta-analysis. Credit Level: G. Credit Hrs: 3.00

26BE962**Special Topics Biostatistics - Graphics on R**

See 26BE761. Credit Level: G. Credit Hrs: 1.00-15.00

26BE963**Special Topics Biostatistics --Genome Wide Association Studies**

See 26BE761. Credit Level: G. Credit Hrs: 1.00-15.00

26BE964**Special Topics Biostatistics**

See 26BE761. Credit Level: G. Credit Hrs: 1.00-15.00

26BE965**Special Topics Biostatistics**

See 26BE761. Credit Level: G. Credit Hrs: 1.00-15.00

26BE966**Clinical Research Scholars Seminar**

Topics such as grant writing, research presentation, job negotiation, critique research and interaction among trainees from all tracks. Credit Level: G. Credit Hrs: 1.00

26BE967**Special Topics - Epidemiology - Disease Specific Translational Research**

See 26BE766. Credit Level: G. Credit Hrs: 1.00-15.00

26BE968**Dilemmas in Epidemiology**

See 26BE766. Credit Level: G. Credit Hrs: 1.00-15.00

26BE969**Special Topics in Molecular Epidemiology**

See 26BE766. Credit Level: G. Credit Hrs: 1.00-15.00

26BE970**Special Topics Epidemiology-Epidemiology of Cancer**

See 26BE766. Credit Level: G. Credit Hrs: 1.00-15.00

26BE973**Molecular Epidemiology - The Use of Biomarkers in Epidemiologic Research**

The course covers how biomarkers can be used in epidemiologic research; scientific, technical and ethical issues in the use of biomarkers and a range of applications for the use of biomarkers in the study of various diseases. Prereq: 26BE776. Credit Level: G. Credit Hrs: 3.00

26BE975**Design and Management of Field Studies in Epidemiology**

Opportunity to acquire knowledge and skills both in formulating a research problem, writing a research proposal or grant application, designing questionnaires, the art of presenting study findings, and evaluating research. Prereq: 26BE776. Credit Level: G. Credit Hrs: 4.00

26BE980**Quality Control Statistics**

Introduces the statistical methodology used in process quality control. Emphasis will be on data analysis techniques, graphical presentations, and interpretation. Credit Level: G. Credit Hrs: 3.00

26BE981**Statistics in the Pharmaceutical Industry**

Discusses controlled clinical trials in general and pharmaceutical industry research in particular. Also covers statistical methods used in the industry. Credit Level: G. Credit Hrs: 2.00

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Cell and Molecular Biology**26CB101****Gross Anatomy**

Study of the body walls, cavities, and lower limb, and head, neck, and upper limb of the human body in the dissecting room; supplemented by lectures. BoK: NS. Credit Level: U. Credit Hrs: 2.00-6.00

26CB841**Medical Histology and Cell Biology**

The normal microscopic structure of cells, tissues and organs with emphasis on structural-functional relationships. Credit Level: G. Credit Hrs: 4.00

26CB871**Human Gross Anatomy**

See 26CB101 for description. Perm of Instructor. Credit Level: G. Credit Hrs: 4.00-10.00

26CB880**Biology of Cancer**

Currently, a one quarter course that covers a broad spectrum of issues relating to the genesis and progression of cancer. Some topics that are covered include cell kinetics and cell cycle regulation in normal and cancerous cells, oncogenes and growth factors, tumor suppressors, the genetics of cancer, mutation and environmental exposure, signal transduction and the role of the immune system in cancer. Credit Level: G. Credit Hrs: 4.00

26CB881**Research**

Laboratory research in cellular or molecular biology, leading toward a doctoral dissertation. Credit Level: G. Credit Hrs: 1.00-20.00

26CB882**Research**

See 26CB881. Credit Level: G. Credit Hrs: 1.00-20.00

26CB883**Research**

See 26CB881. Credit Level: G. Credit Hrs: 1.00-20.00

26CB884**Research**

See 26CB881. Credit Level: G. Credit Hrs: 1.00-15.00

26CB915**Seminar**

Formal presentations of current research in cell and molecular biology will be given by speakers from both UC and other institutions. Credit Level: G. Credit Hrs: 1.00

26CB916**Seminar**

See 26CB915 for course description. Credit Level: G. Credit Hrs: 1.00

26CB917**Seminar**

See 26CB915 for course description. Credit Level: G. Credit Hrs: 1.00

26CB921**Seminar Redux**

This is a discussion course in which the research topic and format of presentation of the Cell Biology seminar for each week are analyzed in detail. Credit Level: G. Credit Hrs: 1.00

26CB922**Scientific Writing**

Principles and practice of scientific writing, including manuscripts and proposals. Perm of Instructor. Credit Level: G. Credit Hrs: 2.00

26CB923**Data Critique and Presentation I**

The main goals of this course are to teach students critical data analysis and interpretation skills through discussion of specific examples of the current biomedical literature. Students also receive

Cell and Molecular Biology**26CB923****Data Critique and Presentation I**

instruction in techniques for effective presentation of data to colleagues. Students must be members of the Cancer & Cell Biology Program or receive a waiver from the Program Directors. Credit Level: G. Credit Hrs: 2.00

26CB924**Data Critique and Presentation II**

The main goals of this course are to teach students critical data analysis and interpretation skills through discussion of specific examples of the current biomedical literature. Students also receive instruction in techniques for effective presentation of data to colleagues. Students must be members of the Cancer & Cell Biology Program or receive a waiver from the Program Directors. Prereq: 26CB923. Credit Level: G. Credit Hrs: 2.00

26CB925**Introduction to Grant Writing and Review**

The goal of this course is to introduce students to successful grant writing strategies. Students receive instruction in grantsmanship and participate in grant writing exercises. Completed grants are critically reviewed by instructors and students. Prereq: 26CB923, 26CB924. Credit Level: G. Credit Hrs: 2.00

26CB926**Data Critique and Presentation III**

The main goals of this course are to teach students critical data analysis and interpretation skills through discussion of specific examples of the current biomedical literature. Students also receive instruction in techniques for effective presentation of data to colleagues. Students must be a member of the Cancer & Cell Biology Program or receive a waiver from the Program Directors. Prereq: 26CB924, 26CB923. Credit Level: G. Credit Hrs: 2.00

26CB950**Special Topics in Cell Biology**

This course offers intensive instruction in specialized areas of cell biology including such topics as cell motility, cell-cell interactions, molecular endocrinology and intracellular trafficking. The content and format varies. Credit Level: G. Credit Hrs: 2.00-4.00

26CB952**Action of Cancer Therapeutics**

This course is designed for students interested in the mechanisms through which cancer therapeutics act and their implementation in clinical settings. The course is team-taught by basic researchers and participating clinical faculty. The course will provide an overview of a variety of therapeutic approaches utilized in the treatment of cancer, the molecular basis through which these therapeutics function, clinical relapse and new therapeutics under development. Credit Level: G. Credit Hrs: 2.00

26CB954**Advanced Cell Biology: Cell Growth and Differentiation**

This course is targeted to advanced students who want to attempt to define a stem cell and study the impact of extra-cellular signals on cell proliferation and differentiation. The level of this course is beyond that presented in Molecular Biology of the Cell II. The course will be held twice a week in a case study format and will be taught and moderated by faculty of the Cell and Molecular Biology Graduate Program. Course grades will be determined by the quality of class participation each week, the creativity and participation of each student as leader of case study presentations (each student is required to lead their case study group twice during the quarter), and a paper submitted by each student on one of the course topics. This course will be offered in alternating years with Advanced Cell Biology: Cell Communication Inside and Out. One of the Advanced Cell Biology courses is required for one quarter for students in the Cell and Molecular Biology Graduate Program. Credit Level: G. Credit Hrs: 2.00

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Cell and Molecular Biology**26CB955****From Drug Target to Therapy**

This course provides an overview of the complex process of discovering a new therapeutic agent. Students will be given a basic understanding of the tools, techniques and approaches as exemplified in the discovery of several recent launches in the cancer field (primarily Gleevec, Iressa, Herceptin). We anticipate scheduling a few seminars from persons credited with discovering marketed therapeutics. Student evaluations will be based on a short paper, active participation and attendance.

Credit Level: G. Credit Hrs: 3.00

Developmental Biology**26DB900D****Developmental Biology Dissertation Research**

Students who have been approved for PhD candidacy are eligible for this special fee dissertation course. Full-time (12 credits) dissertation research effort is required, and a student registered for this course cannot register for any other courses in that quarter. Research in the lab of faculty member on a defined problem will be performed to teach lab techniques and approaches to research. Literature readings and discussion of research with staff and dissertation writing also are included. Offered each quarter, may be taken repeatedly. Credit Level: G. Credit Hrs: 12.00

26DB901**Developmental Biology Research Seminar**

Contemporary research papers presented by members of the staff and invited speakers. May be taken repeatedly. Credit Level: G. Credit Hrs: 1.00

26DB902**Developmental Biology Research Seminar**

See 26DB901. Credit Level: G. Credit Hrs: 1.00

26DB903**Developmental Biology Research Seminar**

See 26DB901. Credit Level: G. Credit Hrs: 1.00

26DB904**Journal Club**

Discussions of research papers in a particular field. May be taken repeatedly. Credit Level: G. Credit Hrs: 1.00

26DB905**Journal Club**

See 26DB904. Credit Level: G. Credit Hrs: 1.00

26DB906**Journal Club**

See 26DB904. Credit Level: G. Credit Hrs: 1.00

26DB973**Developmental Biology Laboratory Research**

Readings, discussions, research in lab of staff member on small defined problem: to familiarize student with research of staff; to teach lab technique and approach to research. Offered ea. qtr. May be taken repeatedly. Credit Level: G. Credit Hrs: 1.00-17.00

26DB985**Introduction to Developmental Biology**

Principles of development of cells, tissues and organisms will be illustrated through genetic and biologic approaches. Credit Level: G. Credit Hrs: 3.00

26DB986**Advanced Developmental Biology**

Principles of development of cells, tissues and organisms will be illustrated through genetic and cell biologic approaches. Credit Level: G. Credit Hrs: 4.00

Developmental Biology**26DB987****Development and Disease**

This course would explore the developmental basis of human disease processes. It is a natural consequence of recent insights into the molecular basis of normal and abnormal development. This course will cover topics not covered in our other Developmental Biology courses. Credit Level: G. Credit Hrs: 3.00

Environmental Health Sciences**26EHS745****Introduction to Environmental Health**

A general study of biological and medical principles and disciplines as they apply to the recognition and resolution of problems of environmental health. BoK: NS. Credit Level: U, G. Credit Hrs: 3.00

26EHS749**Quality Assurance and Quality Control in Environmental Toxicology and Chemistry**

The principles and strategies for a QA/QC program to provide credible data and to evaluate the accuracy, bias, and precision of environmental, toxicological, and biological monitoring data forming the basis for critical decisions on vital human health and environmental matters. Credit Level: G. Credit Hrs: 3.00

26EHS750**Public Policy and Environmental Health**

The community attitudes and political climates that impact on scientific information and determine public health policy. The Occupational Safety and Health Act and the Toxic Substances Act will be used as primary examples. Credit Level: G. Credit Hrs: 2.00

26EHS776**Special Topics -- Environmental Health**

Seminars or tutorial sessions dealing with special topics as related to research and application basic to the field of environmental health. Credit Level: G. Credit Hrs: 1.00-15.00

26EHS777**Special Topics Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

26EHS778**Special Topics Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

26EHS779**Special Topics - Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

26EHS780**Special Topics Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

26EHS785**Introductory Physiology**

Basic biological principles with lectures on structure and function in mammals. Credit Level: G. Credit Hrs: 3.00

26EHS876**Special Topics -- Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

26EHS877**Special Topics Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

26EHS878**Special Topics Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

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Environmental Health Sciences**26EHS879****Special Topics Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

26EHS880**Special Topics Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

26EHS976**Special Topics -- Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

26EHS977**Special Topics Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

26EHS978**Special Topics Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

26EHS979**Special Topics Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

26EHS980**Special Topics Environmental Health**

See 26EHS776. Credit Level: G. Credit Hrs: 1.00-15.00

Environmental and Industrial Hygiene**26EIH707****Principles of Occupational Exposure Assessment**

Lectures, demonstrations on problems arising from man's environment, industrial hygiene, air pollution fundamentals and practices. Credit Level: G. Credit Hrs: 3.00

26EIH725**Teaching Practicum in Environmental Health**

Practice of assisting and teaching in environmental courses by special arrangement with faculty member who will provide supervision. Credit Level: G. Credit Hrs: 1.00-3.00

26EIH726**Teaching Practicum in Environmental Health**

See 26ENV725. Credit Level: G. Credit Hrs: 1.00-3.00

26EIH727**Teaching Practicum in Environmental Health**

See 26ENV725. Credit Level: G. Credit Hrs: 1.00-3.00

26EIH741**Practice in Occupational Exposure Assessment I**

Calibration of sampling equipment, collection and analysis of pollutant gases, vapors, and particles. Quality assurance/control. Control of exposures through use of respirators. Lec., lab. Credit Level: G. Credit Hrs: 3.00

26EIH742**Practice in Occupational Exposure Assessment II**

Assessment of human exposure to chemical and physical occupational hazards: bioaerosols, heat stress, noise, chemicals. Exposure control through ventilation. Lec., lab. Taking the course Physical Aspects of the Environment (26-EIH-790) simultaneously or before is strongly recommended. Credit Level: G. Credit Hrs: 3.00

26EIH743**Physical and Biological Aspects of Aerosols**

Concepts and parameters for generating, transport, sampling and characterizing airborne particles and microorganisms; principles and techniques for aerosol measurements; use of PM collectors and direct-reading instruments in indoor and ambient air environments; identification and enumeration of airborne microorganisms and

Environmental and Industrial Hygiene**26EIH743****Physical and Biological Aspects of Aerosols**

aeroallergens; bioaerosols and health effects; bioterrorism threat; id/control Credit Level: G. Credit Hrs: 3.00

26EIH771**Special Topics -- Air Pollution - Practice in Occupational Exposure Assessment 2**

Seminars or tutorial sessions dealing with special topics in air pollution related to research and application basic to field of environmental health. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH772**Energy and Environment**

Environmental and health impacts of existing and developing energy systems, from source development to conversion to utilization, including transport elements, recycling, and conservation. Credit Level: G. Credit Hrs: 2.00

26EIH773**Special Topics Air Pollution - Oak Ridge National Laboratories**

See 26EIH771. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH774**Special Topics Air Pollution - Occupational Exposure Assessment**

See 26EIH771. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH775**Evaluation of Workplace Exposures**

Evaluation of chemical, physical hazards in industrial workplaces. Potential hazards include noise, glare, heat, dust, solvents, electromagnetic radiation, etc. Credit Level: G. Credit Hrs: 3.00

26EIH776**Special Topics - Ventilation Design Concepts**

See 26EIH771. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH777**Special Topics Air Pollution - Expanded EIH 742 Topics**

See 26EIH771. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH779**Industrial Ventilation**

Air flow through ventilation systems, and their design for industrial uses; selection of exhaust hoods; sizing of ducts; calculation of system pressure losses; selection of fans; design of complex systems. Credit Level: G. Credit Hrs: 3.00

26EIH781**Programmatic Aspects of Occupational Safety and Health**

Principles, philosophies, basic concepts of occupational medicine, industrial hygiene, safety, nursing and epidemiology and their interrelationship. Credit Level: G. Credit Hrs: 1.00

26EIH782**Special Topics I.H.-Eval of WHO Toolbox for Exposure Control in Mozambique & other African Countries**

Seminars or tutorial sessions dealing with special topics in industrial hygiene as related to research and application basic to field of environmental health. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH783**Special Topics-ERC Coal Mining Trip**

See 26EIH782. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH784**Special Topics Industrial Hygiene - Aerosol Generation and Protection Laboratory**

See 26EIH782. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH785**Special Topics Industrial Hygiene - Introduction to Occupational & Environmental Health**

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Environmental and Industrial Hygiene**26EIH785****Special Topics Industrial Hygiene - Introduction to Occupational & Environmental Health**

Replaces 26EIH781 - Intro to OCC Health - see 29AN CH810 course description Credit Level: G. Credit Hrs: 1.00-15.00

26EIH786**Occupational Health High School Workshop**

See 26EIH782. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH790**Physical Aspects of the Environment**

Principles and techniques of recognizing and evaluating health problems of vibration, heat, noise, non-ionizing radiation, ultraviolet, visible, infrared, and microwave. Credit Level: G. Credit Hrs: 3.00

26EIH819**Occupational Health, Hygiene and Safety Workshop**

Interdisciplinary workshop of occupational safety, occupational nursing, industrial hygiene, and occupational medicine students. Involves group projects, interdisciplinary presentations and team building skills. Credit Level: G. Credit Hrs: 2.00

26EIH820**Occupational Health, Hygiene and Safety Workshop**

See 26EIH819. Credit Level: G. Credit Hrs: 2.00

26EIH821**Occupational Health, Hygiene and Safety Workshop**

See 26EIH819. Credit Level: G. Credit Hrs: 2.00

26EIH834**Hazardous Materials Management**

Technical, health, economic, and institutional issues in hazardous waste management, including generation, storage, transportation, treatment and disposal, field trips, risk assessment, emergency response, waste minimization and computer applications. Credit Level: G. Credit Hrs: 2.00

26EIH835**Environmental Quality Management**

Topics vary but include technical, economic, and institutional aspects of selected water, wastewater, solid and hazardous wastes, energy and housing programs. Credit Level: G. Credit Hrs: 2.00

26EIH843**Human Biological Monitoring and Biological Markers**

The development and use of specific metabolites, DNA and protein adducts, and general screening tests of exposure to chemicals and of adverse effects in humans. Credit Level: G. Credit Hrs: 3.00

26EIH845**Methods to Obtain Complete Occupational Histories**

Students will attend the occupational medicine clinic, assist in obtaining an occupational history and research potential exposures for the jobs held to better understand effects of workplace exposures. Credit Level: G. Credit Hrs: 2.00

26EIH846**Effective Methods for Worker Health and Safety Training**

Specific needs of adult learners, effective methods for workplace health and safety training and a practicum on program design are included. Open to students in hygiene, safety and related professionals. Credit Level: G. Credit Hrs: 2.00

26EIH871**Special Topics -- Air Pollution -- Bioaerosol sampling and analysis.**

See 26EIH771. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH872**Special Topics Air Pollution - Readings in Biomonitoring**

See 26EIH771. Credit Level: G. Credit Hrs: 1.00-15.00

Environmental and Industrial Hygiene**26EIH873****Special Topics - I. H. - Energy and the Environment**

See 26EIH771. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH874**Special Topics Air Pollution - Biological Monitoring Particle Matter**

See 26EIH771. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH875**Special Topics Air Pollution**

See 26EIH771. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH881**Special Topics -- Industrial Hygiene -- Pilot Research Project (PRP)**

See 26EIH782. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH882**Special Topics Industrial Hygiene-Carcinogenesis**

See 26EIH782. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH883**Special Topics-Issues in Occupational Toxicology**

See 26EIH782. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH884**Special Topics Industrial Hygiene - Professional Development**

See 26EIH782. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH885**Special Topics Industrial Hygiene - Identification of Potential Workplace Exposures**

See 26EIH782. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH901**Instrumental Methods of Analysis of Pollutants I**

Lecture, lab. Chromatography. Credit Level: G. Credit Hrs: 3.00

26EIH902**Instrumental Methods of Analysis of Pollutants II**

Lecture, laboratory. Direct reading instrumentation. Credit Level: G. Credit Hrs: 3.00

26EIH903**Instrumental Methods of Analysis of Pollutants III**

Lecture, laboratory. Introduction to mass spectrometry, fluorescence and ultra-violet spectroscopy and allied topics. Credit Level: G. Credit Hrs: 3.00

26EIH904**Identification of Potential Workplace Exposures**

Field trips to representative industrial plants to illustrate principles of industrial operations, and methods employed in controlling physical, chemical hazards. Credit Level: G. Credit Hrs: 2.00

26EIH905**Identification of Potential Workplace Exposures**

See 26EIH904. Credit Level: G. Credit Hrs: 3.00

26EIH971**Advanced Topics in Environmental and Occupational Hygiene**

Follow up to 26EIH775. Provide time for a structured review and discussion of the issues raised in the survey reports conducted in 26EIH775 history/ethics. OSHA procedures and history/ethics are covered in order to provide an opportunity for 2nd yr students to synthesize knowledge/skills. Credit Level: G. Credit Hrs: 1.00

26EIH972**Special Topics Air Pollution**

See 26EIH771. Credit Level: G. Credit Hrs: 1.00-15.00

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Environmental and Industrial Hygiene**26EIH973****Special Topics Air Pollution**

See 26EIH771. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH974**Special Topics Air Pollution**

See 26EIH771. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH975**Special Topics Air Pollution**

See 26EIH771. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH981**Current Topics in Occupational Hygiene**

OH seminar series on current topics in the field. Meetings every other week. Credit Level: G. Credit Hrs: 1.00

26EIH982**Current Topics in Occupational Hygiene**

OH seminar series on current topics in the field. Meetings every other week. Credit Level: G. Credit Hrs: 1.00

26EIH983**Current Topics in Occupational Hygiene**

OH seminar series on current topics in the field. Meetings every other week. Credit Level: G. Credit Hrs: 1.00

26EIH984**Special Topics Industrial Hygiene**

See 26EIH782. Credit Level: G. Credit Hrs: 1.00-15.00

26EIH985**Special Topics Industrial Hygiene**

See 26EIH782. Credit Level: G. Credit Hrs: 1.00-15.00

Environmental Health**26ENV701****Environmental Health Seminar**

Lectures and discussions covering a broad range of problems in environmental health led by guest lecturers considered leaders in their field. Credit Level: G. Credit Hrs: 1.00

26ENV702**Environmental Health Seminar**

See 26ENV701. Credit Level: G. Credit Hrs: 1.00

26ENV703**Environmental Health Seminar**

See 26ENV701. Credit Level: G. Credit Hrs: 1.00

26ENV791**Master's Thesis Research**

Credits to be arranged. This course is to be used by the student working on his/her master thesis. Credit Level: G. Credit Hrs: 1.00-15.00

26ENV796**Special Topics**

Seminars or tutorial sessions; biological science, toxicology, engineering, clinical medicine, related to environmental health. Credit Level: G. Credit Hrs: 1.00-15.00

26ENV797**Special Topics**

See 26ENV796. Credit Level: G. Credit Hrs: 1.00-15.00

26ENV798**Special Topics**

See 26ENV796. Credit Level: G. Credit Hrs: 1.00-15.00

Environmental Health**26ENV799****Special Topics**

See 26ENV796. Credit Level: G. Credit Hrs: 1.00-15.00

26ENV891**Research**

Credits to be arranged. Credit Level: G. Credit Hrs: 1.00-15.00

26ENV896**Special Topics - Biomedical Engineering Applications for Study of Vascular Function**

. Credit Level: G. Credit Hrs: 1.00-15.00

26ENV897**Special Topics**

See 26ENV796. Credit Level: G. Credit Hrs: 1.00-15.00

26ENV898**Special Topics**

See 26ENV796. Credit Level: G. Credit Hrs: 1.00-15.00

26ENV899**Special Topics**

See 26ENV796. Credit Level: G. Credit Hrs: 1.00-15.00

26ENV991**Doctoral Dissertation Research**

Credits to be arranged. Credit Level: G. Credit Hrs: 1.00-15.00

26ENV996**Special Topics**

See 26ENV796. Credit Level: G. Credit Hrs: 1.00-15.00

26ENV997**Special Topics**

See 26ENV796. Credit Level: G. Credit Hrs: 1.00-15.00

26ENV998**Special Topics**

See 26ENV796. Credit Level: G. Credit Hrs: 1.00-15.00

26ENV999**Special Topics**

See 26ENV796. Credit Level: G. Credit Hrs: 1.00-15.00

Graduate Medicine Interdepartmental**26GNTD730****Ethics in Research**

A nine week lecture series addressing ethical issues in research including such topics as human experimentation, animal welfare, conflict of interest, and responsible authorship and publication practices. Credit Level: G. Credit Hrs: 1.00

26GNTD741**Medical Biochemistry and Human Genetics**

Chemistry of proteins, enzymes and other macromolecules; bioenergetics, cellular and mammalian metabolism, metabolic control mechanisms, molecular genetics and nutrition. Credit Level: G. Credit Hrs: 7.00

26GNTD742**Medical Biochemistry and Human Genetics**

Chemistry of proteins, enzymes and other macromolecules; bioenergetics, cellular and mammalian metabolism, metabolic control mechanisms, molecular genetics and nutrition. Credit Level: G. Credit Hrs: 5.00

26GNTD780**Flex Option Research**

Laboratory rotation for students in the Flex Option Program during the first year of graduate study in the College of Medicine. Credit Level: G.

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Graduate Medicine Interdepartmental**26GNTD780****Flex Option Research**

Credit Hrs: 1.00-12.00

26GNTD781**Flex Option Research**

Laboratory rotation for students in the Flex Option Program during the first year of graduate study in the College of Medicine. Credit Level: G. Credit Hrs: 1.00-12.00

26GNTD782**Flex Option Research**

Laboratory rotation for students in the Flex Option Program during the first year of graduate study in the College of Medicine. Credit Level: G. Credit Hrs: 1.00-12.00

26GNTD783**Flex Option Research**

Laboratory rotation for students in the Flex Option Program during the first year of graduate study in the College of Medicine. Credit Level: G. Credit Hrs: 1.00-12.00

26GNTD871**Molecular Genetics**

Genetic concepts, DNA structure, replication and repair, recombination, transcription, translation, regulation, cloning methods. Perm of Instructor. Credit Level: G. Credit Hrs: 3.00

26GNTD872**Biochemistry**

Application of classical and molecular techniques to problems of protein structure and function; membrane organization and dynamics; biochemistry of membrane transport processes. Credit Level: G. Credit Hrs: 3.00

26GNTD873**Cell Biology**

This course covers membrane biology and basic cell biology. Emphases include membrane structure and generation of resting and action potentials, cell compartmentalization and organelles, protein trafficking and secretion, cytoskeleton, extracellular matrix, nuclear architecture and chromosome structure. The course integrates morphological, biochemical and biophysical approaches. Credit Level: G. Credit Hrs: 3.00

26GNTD881**Introduction to Functional Genomics**

The course will consist of a series of lectures/seminars on the theory and use of methods of functional genomics in biomedical research. Lectures will be presented by some local speakers and invited experts outside the university. The course will include eight lab sessions, five on bioinformatics that will be offered in an electronic classroom and three "wet labs" that will provide hands-on experience in practical application of functional genomics principles. Prereq: 26GNTD871. Credit Level: G. Credit Hrs: 3.00

Immunobiology**26IMM801****Journal Club**

Critical reviews and group discussion of current issues and literature. Presentations will be made by students, faculty and outside speaker. Credit Level: G. Credit Hrs: 1.00

26IMM802**Journal Club**

Critical reviews and group discussion of current issues and literature. Presentations will be made by students, faculty and outside speaker. Credit Level: G. Credit Hrs: 1.00

26IMM803**Journal Club**

Critical reviews and group discussion of current issues and literature. Presentations will be made by students, faculty and outside speaker.

Immunobiology**26IMM803****Journal Club**

Credit Level: G. Credit Hrs: 1.00

26IMM804**Seminar**

Research seminars by guest scientists and summations of research in progress by faculty and fellows. Credit Level: G. Credit Hrs: 1.00

26IMM805**Seminar**

Research seminars by guest scientists and summations of research in progress by faculty and fellows. Credit Level: G. Credit Hrs: 1.00

26IMM806**Seminar**

Research seminars by guest scientists and summations of research in progress by faculty and fellows. Credit Level: G. Credit Hrs: 1.00

26IMM807**Immunobiology Student / Post Doc Forum**

Graduate students present their research with the aid of their mentor. Credit Level: G. Credit Hrs: 1.00

26IMM808**Seminar (Immunohematology Club)**

Immunohematology Club is a seminar as part of the immunobiology graduate program curriculum. Credit Level: G. Credit Hrs: 1.00

26IMM872**Research**

Investigative work in partial fulfillment of requirements for the Masters and the PhD degrees. Offered each quarter. Credit Level: G. Credit Hrs: 1.00-12.00

26IMM888**Foundations of Immunology I**

Foundations of Immunology is intended to be a comprehensive immunology course for first year graduate students. It covers the structure and organization of the immune system, basic concepts of the innate and adaptive immune responses, and T and B cell development and biology. Lectures will also include details of immunological techniques. While the course has no official prerequisites, students will find that some background in basic biochemistry, cell biology and molecular genetics will be desirable. Credit Level: G. Credit Hrs: 4.00

26IMM889**Foundations of Immunology II**

This course is designed to apply the concepts learned in Foundations of Immunology I to understanding the regulation of immune responses and inflammation. Prereq: 26IMM888. Credit Level: G. Credit Hrs: 4.00

26IMM890**Advanced Topics in Immunology**

This course will cover the most significant advances in immunological research, derived from the current literature. Each class section will focus on a specific topic with first, a short general discussion and second, a focused look at some isolated issues. Students will be assigned papers to present at each class session. Journal club format will be used, where the course director will cover background and introductory information on a current topic of immunology (i.e. chemokines, cytokine receptors, apoptosis, memory, etc.) and will subsequently lead a round table discussion of data from the primary literature. Designed for masters, doctoral and advanced undergraduate students with prior experience in immunology. A portion of the grade will be based on an NIH-style grant proposal turned in at the end of the course. The grant will be based on any paper that is covered in the course. The last session will consist of a student-run study section to critique the grants written by their peers. Prereq: 26IMM888, 26IMM889. Credit Level: G. Credit Hrs: 1.00

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Immunobiology**26IMM891****Advanced Topics in Immunology**

This course will cover the most significant advances in immunological research, derived from the current literature. Each section will focus on a specific topic with a short general discussion and a focused look at some isolated issues. Students will be assigned papers to present at each class session. Journal club format will be used, in which the course director will cover background and introductory information on a current topic of immunology (chemokines, cytokines receptors, apoptosis, memory, etc.) and will subsequently lead a round table discussion of data from the primary literature. Designed for masters, doctoral and advanced undergraduate students with prior experience in immunology. A portion of the grade will be based on an NIH-style grant proposal turned in at the end of the class. The grant will be based on any paper that is covered in the class. The last session will consist of a student-run study section to critique the grants written by their peers. Credit Level: G. Credit Hrs: 2.00

Molecular, Cellular and Biochemical Pharmacology**26MCBP801****Lab Rotation**

A series of practical laboratory methods employed in contemporary pharmacology research. Computer models and modeling, quantitative analysis, statistical applications, experimental design. Molecular, cellular, organ, organ system and organism levels. Credit Level: G. Credit Hrs: 1.00-12.00

26MCBP802**Lab Rotation**

See 26MCBP801. Credit Level: G. Credit Hrs: 1.00-12.00

26MCBP803**Lab Rotation**

See 26MCBP801. Credit Level: G. Credit Hrs: 1.00-12.00

26MCBP804**Lab Rotation**

See 26MCBP801. Credit Level: G. Credit Hrs: 1.00-12.00

26MCBP805**Seminar**

Emphasis on drugs; mechanism of action; historical, classical and novel concepts; current discoveries; trends in pharmacology. Oral presentation and written assignments/reports. Current literature and critical reviews. Credit Level: G. Credit Hrs: 1.00

26MCBP806**Seminar**

See 26MCBP805. Credit Level: G. Credit Hrs: 1.00

26MCBP807**Seminar**

See 26MCBP805. Credit Level: G. Credit Hrs: 1.00

26MCBP821**Cell Biophysics I**

Membranes and Bioenergetics. Current concepts of structure, function, regulation, and intracellular integration of energy transducing membranes, with emphasis on their roles in heart muscle and in heart and neural diseases and aging. Credit Level: G. Credit Hrs: 3.00

26MCBP823**Integrated Molecular Pharmacology and Medicine**

Pharmacology at the whole animal, organ, tissue, cellular and molecular levels. Integrated concepts of biomechanics and bioenergetics, structure and function, excitation-contraction coupling, ion transport, regulatory mechanisms, drug actions and transgenic approaches. Perm of Instructor. Credit Level: G. Credit Hrs: 3.00-5.00

Molecular, Cellular and Biochemical Pharmacology**26MCBP831****Receptor Pharmacology**

An introductory course designed specifically for graduate students to supplement portions of the primary course in pharmacology with emphasis on modern concepts of drug receptor interactions. Credit Level: G. Credit Hrs: 4.00

26MCBP837**Advanced Topics Protein Phosphorylation**

Concepts of protein, phosphorylation by various protein kinases. Regulation of cellular functions through phosphorylation/dephosphorylation processes. Credit Level: G. Credit Hrs: 3.00

26MCBP841**Pharmacology and Therapeutics I**

Principles of drug action and the rational use of drugs in clinical disorders. Lectures, demonstrations, and conferences. Credit Level: G. Credit Hrs: 3.00

26MCBP842**Pharmacology and Therapeutics II**

Continuation of 26MCBP841. Prereq: 26MCBP841. Credit Level: G. Credit Hrs: 2.00

26MCBP843**Pharmacology and Therapeutics III**

Principles of drug action and the rational use of drugs in clinical disorders. Lectures, demonstrations, and conferences. Credit Level: G. Credit Hrs: 3.00

26MCBP844**Pharmacology and Therapeutics IV**

Principles of drug action and the rational use of drugs in clinical disorders. Lectures, demonstrations, and conferences. Credit Level: G. Credit Hrs: 3.00

26MCBP851**Cardiac Muscle Bioenergetics**

Current concepts of bioenergetics, molecular and cell biology as they related to the intracellular integration of energy production and utilization in normal and ischemic cardiac muscle. Credit Level: G. Credit Hrs: 3.00

26MCBP871**Lab Rotation**

A series of laboratory problems carried out under supervision of the staff. Credit Level: G. Credit Hrs: 1.00-15.00

26MCBP873**Advanced Topics in Electropharmacology**

Membrane potentials and electrical models of nerve, muscle, and synapse. Analysis of ionic theories for bioelectric phenomena. Credit Level: G. Credit Hrs: 3.00

26MCBP888**Community Pharmacology**

Individual research projects and seminars on use of drugs by medical and non-medical community, e.g., drug epidemiology, drug "abuse," drug information. Credit Level: G. Credit Hrs: 2.00-6.00

26MCBP903**Special Topics in Pharmacology**

This course offers advanced instruction in specialized areas of pharmacology. The content and format varies. Credit Level: G. Credit Hrs: 1.00-4.00

26MCBP905**Emerging Concepts in Targeting Common Metabolic Disorders**

Students will be introduced to the emerging multidisciplinary concepts in the prevention and cure of the most common metabolic diseases. Credit Level: G. Credit Hrs: 2.00

26MCBP951**Molecular Pharmacology**

The goal of this course is to introduce the major concepts, literature and

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Molecular, Cellular and Biochemical Pharmacology**26MCP951****Molecular Pharmacology**

experimental approaches related to the study of membrane transport proteins, including ion channels, pumps and transporters. Perm of Instructor. Credit Level: G. Credit Hrs: 4.00

26MCP971**Research**

Dissertation research in Pharmacology and Cell Biophysics. Credit Level: G. Credit Hrs: 1.00-15.00

Molecular & Cellular Physiology**26MCP841****Medical Physiology I**

Subcellular organelles, cells, tissues, organ systems and their integrated activity. Focus: cellular, muscle, cardiac, circulatory, renal, respiration, the physiology acid base, and the physiology of energy balance and temperature regulation. Credit Level: G. Credit Hrs: 7.00

26MCP842**Medical Physiology II**

Subcellular organelles, cells, tissues, organs systems, and their integrated activity. Focus: gastrointestinal physiology, endocrine physiology, and the physiology of reproduction. Perm of Instructor. Credit Level: G. Credit Hrs: 5.00

26MCP843**Graduate Physiology I**

To understand the body fluid spaces and the forces and flows maintaining homeostasis at the cellular level. To understand bioelectrical phenomena for the origin of the cell membrane potential to cardiac electrophysiology. To be able to characterize muscle mechanical properties as well as to understand the underlying mechanisms. To expose students to standard laboratory approaches used to explore essential cellular processes. Perm of Instructor. Credit Level: G. Credit Hrs: 2.00

26MCP844**Graduate Physiology II**

To provide a thorough understanding of the fundamental principles of cardiac and vascular physiology at the whole animal, organ and cell and molecular levels. To review some of the major research areas and experimental approaches that represent current and pressing questions in cardiovascular research. To expose students to laboratory environments and techniques currently in use to explore cardiovascular function - particularly in gene-manipulated mouse models. To review and evaluate the current literature in representative areas of cutting-edge cardiovascular research Perm of Instructor. Credit Level: G. Credit Hrs: 3.00

26MCP845**Graduate Physiology III**

To provide a thorough understanding of the fundamental principles of renal, respiratory and acid-base physiology at the whole animal, organ, cell and molecular levels. To review major research areas and experimental approaches used in renal, respiratory and acid-base research. To familiarize students with techniques currently in use to explore renal, respiratory and acid-base function. To review and evaluate the current literature. Perm of Instructor. Credit Level: G. Credit Hrs: 3.00

26MCP846**Graduate Physiology IV**

To provide current understanding of hormone actions and endocrine control of body functions, particularly as it relates to the gastrointestinal system. To review major research areas and experimental approaches used in the study of hormone signaling and GI function. To familiarize students with techniques currently in use to explore endocrine and GI physiology. To critically review and evaluate current literature in the area of hormone signaling mechanism and control of epithelial function. Perm of Instructor. Credit Level: G. Credit Hrs: 3.00

Molecular & Cellular Physiology**26MCP847****Graduate Physiology V**

To provide a thorough understanding of the fundamental principles of neurophysiology animal, organ, cell and molecular levels. To review and evaluate the current literature in representative areas neurophysiology with attention to current experimental approaches. Credit Level: G. Credit Hrs: 3.00

26MCP848**Special Topics in Systems Biology and Physiology**

This course provides advanced education in current areas of interest within systems biology and physiology, utilizing faculty expertise and serving students' interests and needs. The content and format varies. Prerequisite - Permission of Program Director and Instructor. Credit Level: G. Credit Hrs: 1.00-4.00

26MCP849**Statistical Methods in Physiology**

A practical course in statistics that will equip students to select and execute the appropriate statistical tests to analyze experimental data typically encountered in physiology research. Course topics include: experimental design; statistical concepts, pitfalls and misconceptions; statistical analysis (including t-tests, analysis of variance, and regression analysis); appropriate and effective data presentation. Credit Level: G. Credit Hrs: 3.00

26MCP874**Research Careers**

A wide range of career options are presented by professionals in field research. Credit Level: G. Credit Hrs: 1.00

26MCP900**Introduction to Research Techniques**

The objective of this course is to demonstrate techniques used in physiology in the context of solving a scientific problem. Credit Level: G. Credit Hrs: 2.00

26MCP902**Human Systems Physiology I**

This course will investigate the bioenergetics of cellular homeostasis, cellular bioelectrical phenomena, muscle, and cardiovascular physiology from molecular to whole organism levels. Credit Level: G. Credit Hrs: 4.00

26MCP903**Human Systems Physiology II**

This course will investigate the fundamentals of respiratory, renal and gastrointestinal physiology along with understanding applications of quantitative biology to physiologic problems. Credit Level: G. Credit Hrs: 4.00

26MCP911**Seminar/Journal Club**

Research seminars by guest scientists and summations of research in progress by faculty and fellows. Perm of Instructor. Credit Level: G. Credit Hrs: 1.00

26MCP912**Seminar/Journal Club**

Research seminars by guest scientists and summations of research in progress by faculty and fellows. Perm of Instructor. Credit Level: G. Credit Hrs: 1.00

26MCP913**Seminar/Journal Club**

Research seminars by guest scientists and summations of research in progress by faculty and fellows. Perm of Instructor. Credit Level: G. Credit Hrs: 1.00

26MCP951**Molecular Physiology I: Membrane Transport Proteins**

The goal of this course is to introduce the major concepts, literature and experimental approaches related to the study of membrane transport proteins, including ion channels, pumps, and transporters. Credit Level:

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Molecular & Cellular Physiology**26MCP951****Molecular Physiology I: Membrane Transport Proteins**

G. Credit Hrs: 4.00

26MCP952**Molecular Physiology II: Molecular Endocrinology**

This course is an advanced study of the molecular mechanisms responsible for hormone, growth factor and cytokine signal transduction. Credit Level: G. Credit Hrs: 4.00

26MCP953**Molecular Physiology III**

The purpose of this course is to integrate abundant molecular biological information and classic organ physiology. The course will be directed to teach students how molecular biology approaches can be applied to study cell and organ function. Emphasis will be placed on the integration of key physiological concepts of selected topics, with particular focus on examples of control mechanisms and how they adapt to changes in the environment to maintain homeostasis. In addition, the topics will be selected from the point of view of their potential relevance in pathophysiology and treatment of major diseases. The clinical correlation will be presented. Credit Level: G. Credit Hrs: 4.00

26MCP963**Renal Physiology**

Concepts of renal function. Discussions of glomerular and tubular functions. Credit Level: G. Credit Hrs: 2.00

26MCP970**Introduction to Research**

Laboratory research for graduate students who have not yet advanced to candidacy. Credit Level: G. Credit Hrs: 1.00-15.00

26MCP971**Thesis Research**

Thesis research in Molecular and Cellular Physiology. Credit Level: G. Credit Hrs: 1.00-15.00

26MCP978**Cell Biology of the Blood Vessel Wall**

Focus on endothelial cell-vascular smooth muscle interactions in the control of vasomotor tone. Credit Level: G. Credit Hrs: 2.00

26MCP981**Physiology/Reproduction**

Discussion of cellular mechanisms of reproductive hormone action, control of growth and development, gametogenesis, reproductive cycles, pregnancy including cardiovascular adaptations during pregnancy, and parturition. Current research methods and publications will be discussed. Credit Level: G. Credit Hrs: 3.00

Medicine**26MD101****Freshman MD Course**

Medical curriculum for first year students. Credit Level: P. Credit Hrs: 24.00

26MD102**Freshman MD Course**

Medical curriculum for first year students. Credit Level: P. Credit Hrs: 24.00

26MD103**Freshman MD Course**

Medical curriculum for first year students. Credit Level: P. Credit Hrs: 24.00

26MD201**Sophomore MD Course**

Medical curriculum for second year students. Credit Level: P. Credit Hrs: 24.00

Medicine**26MD202****Sophomore MD Course**

Medical curriculum for second year students. Credit Level: P. Credit Hrs: 24.00

26MD203**Sophomore MD Course**

Medical curriculum for second year students. Credit Level: P. Credit Hrs: 24.00

26MD401**Junior MD Course**

Medical curriculum for third year students. Credit Level: P. Credit Hrs: 24.00

26MD402**Junior MD Course**

Medical curriculum for third year students. Credit Level: P. Credit Hrs: 24.00

26MD403**Junior MD Course**

Medical curriculum for third year students. Credit Level: P. Credit Hrs: 24.00

26MD404**Junior MD Course**

Medical curriculum for third year students. Credit Level: P. Credit Hrs: 24.00

26MD501**Senior MD Course**

Medical curriculum for fourth year students. Credit Level: P. Credit Hrs: 24.00

26MD502**Senior MD Course**

Medical curriculum for fourth year students. Credit Level: P. Credit Hrs: 24.00

26MD503**Senior MD Course**

Medical curriculum for fourth year students. Credit Level: P. Credit Hrs: 24.00

26MD504**Senior MD Course**

Medical curriculum for fourth year students. Credit Level: P. Credit Hrs: 24.00

26MD533**Medical Curriculum Special Studies**

Special studies for the first, second, third or fourth year medical student. Schedules worked out in conjunction with the student, the Promotion Board and Student Affairs. Credit Level: P. Credit Hrs: 12.00

Molecular Gen, Biochem, Microbiol & Immunology**26MG599****Introduction to Immunology**

A comprehensive introductory level immunology course for graduate students, advanced undergraduates, technicians and fellows. It will cover basic immunochemistry and cellular and molecular immunology. While the course has no official prerequisites, students will find that some background in basic biochemistry, cell biology and molecular genetics will be desirable. BoK: NS. Credit Level: U, G. Credit Hrs: 3.00

26MG620**Advanced Immunology-Contemporary Topic I**

This course will cover the most significant advances in immunological research, derived from the current literature. Journal club format will be used, where the presenter will cover background and introductory information on a topic chosen with the advice and consent of the instructor, and will subsequently lead a round table discussion of data from the primary literature. Designed for masters, doctoral and

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Molecular Gen, Biochem, Microbiol & Immunology**26MG620****Advanced Immunology-Contemporary Topic I**

advanced undergraduate students with prior experience in immunology. Each student will be assigned as discussion leader twice per quarter. Enrollment limited to 10. BoK: NS. Credit Level: U, G. Credit Hrs: 1.00

26MG621**Advanced Immunology-Contemporary Topics II**

Same as 26MG620. BoK: NS. Credit Level: U, G. Credit Hrs: 1.00

26MG622**Advanced Immunology-Contemporary Topics III**

Same as 26MG620. BoK: NS. Credit Level: U, G. Credit Hrs: 1.00

26MG649**Pathogenic Mechanisms**

This course covers the basics of bacterial fungal pathogenesis and virology with emphasis on viral replication. Perm of Instructor. Credit Level: G. Credit Hrs: 3.00

26MG708**Yeast Mutants as an Educational Tool**

This course will provide teachers the necessary knowledge and training to permit them to teach fundamental aspects of modern molecular biological research to their K-12 students. This course will use a problem in yeast biochemical genetics to guide students through the application of the scientific method. The essential laboratory component of the class is designed to familiarize teachers with molecular genetic techniques. Perm of Instructor. Credit Level: G. Credit Hrs: 4.00

26MG710**Advanced Molecular Genetics I: Gene Regulation**

Provides a literature-based view of major research questions, with emphasis upon gene structure and the regulation of gene expression. Student discussions are included with the lecture format. Prereq: 26GNTD871. Credit Level: G. Credit Hrs: 4.00

26MG711**Mechanisms of Signal Transduction**

Provides a research literature-based view of modern aspects of signal transduction and includes student driven discussions of seminal papers in the signal transduction field. Topics include receptor-mediated signal transduction originating at the plasma membrane and covers major effector pathways including those leading to second messenger generation, kinase cascade assembly, and activation of transcription factors. We will be discussing signaling mechanisms related to cellular homeostasis, developmental biology, immunology, and cancer. Recommended prerequisites: Introduction to Molecular Genetics and Molecular Biology of the Cell I. Spring Quarter only. Prereq: 26GNTD871, 26GNTD872. Credit Level: G. Credit Hrs: 3.00

26MG712**Microbiology and Immunology**

This course will provide individuals interested in microbiology with a firm foundation to pursue their studies. In addition, the course will provide all biological science students with the fundamentals of prokaryotic biology that lie at the heart of modern molecular genetic techniques. The topics to be covered include prokaryotic structure and function, gene regulation and protein synthesis, gene transfer, plasmids, bacteriophage genetics and restriction and modification of systems. Credit Level: G. Credit Hrs: 3.00

26MG718**Structural Biology**

This course will cover structural techniques used to determine protein structure, dynamics and enzyme mechanisms. Particular emphasis will be placed on solution NMR techniques to problems in protein structure and enzyme mechanism. The course will consist of both lectures and a review of pertinent literature articles. Topics to be covered include NMR theory, practical aspects of biological NMR, the use of structural techniques in understanding HIV proteins, structural studies of muscle

Molecular Gen, Biochem, Microbiol & Immunology**26MG718****Structural Biology**

proteins, as well as mechanistic studies of ribonucleases and phosphoryl transfer enzymes. Credit Level: G. Credit Hrs: 2.00

26MG719**Proteins: Structure, Function and Engineering**

Designed for graduate students who have completed the first quarter of Molecular Biology of the Cell. Protein design; enzyme specificity and mechanisms of catalysis; transport physiology and enzymology; macromolecular assembly, protein-protein interactions and signal transduction; NMR and macromolecular structure. Credit Level: G. Credit Hrs: 4.00

26MG730**PC Research Applications**

An introduction to the use of database, spreadsheets, graphics, word processing programs, and DNA sequence analysis. Credit Level: G. Credit Hrs: 1.00

26MG820**Biologic Threat Agents**

This course deals with microbes of interest in bioterrorism. Lectures providing background information on selected agents will be followed by student presentations of current research papers on the topic. Winter Quarter only. 3 gr. cr. hrs. Perm of Instructor. Credit Level: G. Credit Hrs: 3.00

26MG821**Human Genetics**

Hours to be arranged. Credit Level: G. Credit Hrs: 1.00-3.00

26MG822**Immunology**

Hours to be arranged. Credit Level: G. Credit Hrs: 1.00-3.00

26MG823**Advanced Topics in Structural Biology**

This advanced topics course will explore the principles, methodologies, and practical applications of macromolecular crystallography in contemporary structural biology research. In addition to understanding the central issues that underlie macromolecular structure determination by crystallographic methods, students will learn through hands-on experiments of the practical aspects for growing crystals, collecting and analyzing X-ray diffraction data, and ultimately determining crystal structures. Credit Level: G. Credit Hrs: 1.00-3.00

26MG824**Image Analysis: A Practical Approach**

This is a practical course on the application of image analysis to current problems in biological research. Students will be provided hands on experience with the application of state of the art image analysis equipment to problems in immunocytochemistry, gel analysis and fluorescence microscopy in living cells. Credit Level: G. Credit Hrs: 2.00

26MG825**Nucleic Acids**

DNA structure and DNA protein interactions during gene expression. Credit Level: G. Credit Hrs: 1.00-3.00

26MG826**Pathogenic Mechanisms**

Hrs. to be arranged. Credit Level: G. Credit Hrs: 1.00-3.00

26MG827**Proteins/Enzymology**

Hrs. to be arranged. Credit Level: G. Credit Hrs: 1.00-3.00

26MG828**Topics in Virology**

Hrs. to be arranged. Credit Level: G. Credit Hrs: 1.00-3.00

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Molecular Gen, Biochem, Microbiol & Immunology**26MG831****Growth Factors**

Hrs. to be arranged. Credit Level: G. Credit Hrs: 1.00-3.00

26MG833**Topics in Genetics: Graduate Seminar**

Hrs. to be arranged. Credit Level: G. Credit Hrs: 3.00

26MG834**Scientific Writing for Publication and Funding I**

The aim of this course is to improve the student's ability to write scientific papers and grant proposals in a clear and cogent manner.

Credit Level: G. Credit Hrs: 1.00

26MG835**Scientific Writing for Publication and Funding II**

Continuation of 26MG834. Prereq: 26MG834. Credit Level: G. Credit Hrs: 1.00

26MG836**Myocardial Biology**

The purpose of this course is to examine in detail the cardiac muscle cell with the major goal of understanding how the heart functions and is regulated. The role of calcium as a central regulator is stressed. Credit Level: G. Credit Hrs: 3.00

26MG837**Advanced Topics in Gene Regulation**

A research article-based course exploring the most recent literature in the field of eukaryotic gene expression and mechanisms of gene regulation. Format will be primarily through numerous student-participatory discussions of research papers and will include several visits by noted leaders in the field from outside institutions. Offered every other year. Prereq: 26MG710. Credit Level: G. Credit Hrs: 3.00

26MG838**Special Topics in Molecular Genetics**

Hrs. to be arranged. Credit Level: G. Credit Hrs: 1.00-3.00

26MG868**Genetics of Complex Diseases**

Introduction to complex disease and traits. Epidemiology and genetic basis of complex diseases. Credit Level: G. Credit Hrs: 3.00

26MG870**Masters Research**

Investigative work in partial fulfillment of the requirements for the Masters degree. Credit Level: G. Credit Hrs: 1.00-15.00

26MG921**Graduate Seminar in Molecular Genetics I**

Review of current literature (under director of faculty adviser). Credit Level: G. Credit Hrs: 2.00

26MG922**Graduate Seminar in Molecular Genetics II**

Review of current literature (under direction of faculty adviser). Credit Level: G. Credit Hrs: 2.00

26MG923**Graduate Seminar in Molecular Genetics III**

Review of current literature (under direction of faculty adviser). Credit Level: G. Credit Hrs: 2.00

26MG950**Doctoral Literature Review**

Independent study course where the student submits a short, written review describing previous work performed by others in the field related to his/her dissertation project. For Molecular Genetics Doctoral Students Only. Autumn Qtr. Credit Level: G. Credit Hrs: 1.00

26MG971**PHD Dissertation Research**

Investigative work in partial fulfillment of the requirements for the PhD degree. Credit Level: G. Credit Hrs: 1.00-15.00

Molecular Gen, Biochem, Microbiol & Immunology**26MG971****PHD Dissertation Research**

Investigative work in partial fulfillment of the requirements for the PhD degree. Credit Level: G. Credit Hrs: 1.00-15.00

26MG972**Special Problems**

Laboratory work and readings. The specific area of concentration will be determined by consultation with the staff. Credit Level: G. Credit Hrs: 1.00-15.00

Medical Physics**26MP941****Radiobiology I**

Physics and chemistry of ionizing radiation interaction with living cell systems. Subcellular and cellular effects: damage, repair, sensitivity. Measurement methods, survival curve models, in vitro, in vivo assays. Tumor and normal tissue responses. Radiosensitizers, radioprotectors, hypoxia. Genetic effects, oncogenes, carcinogenesis, risk estimates. Cancer radiotherapy: fractionation, dose-rate, adjuvant therapies. Effects on whole body, organ and tissues systems, dose limits. Credit Level: G. Credit Hrs: 2.00

26MP942**Radiobiology II**

See 26MP941. Credit Level: G. Credit Hrs: 2.00

26MP943**Radiobiology III**

See 26MP941. Credit Level: G. Credit Hrs: 2.00

26MP944**Radiologic Dosimetry I**

Physical interactions between electromagnetic radiation and matter; exposure and absorbed dose; dose calculations for external and internal radiation sources. Credit Level: G. Credit Hrs: 2.00

26MP945**Radiologic Dosimetry II**

See 26MP944. Credit Level: G. Credit Hrs: 2.00

26MP946**Radiologic Dosimetry III**

See 26MP944. Credit Level: G. Credit Hrs: 2.00

26MP950**Radiologic Imaging Physics I**

Physical principles of imaging including diagnostic radiology, x-ray equipment, image quality evaluation, information transfer systems, special imaging modalities of mammography, digital radiography, CT, ultrasound, MRI, nuclear medicine, radiation detection, clinical instrumentation. Credit Level: G. Credit Hrs: 2.00

26MP951**Radiologic Imaging Physics II**

See 26MP950. Credit Level: G. Credit Hrs: 2.00

26MP952**Radiologic Imaging Physics III**

Physical principles of imaging including diagnostic radiology, x-ray equipment, image quality evaluation, information transfer systems, special imaging modalities of mammography, digital radiography, CT, ultrasound, MRI, nuclear medicine, radiation detection, clinical instrumentation. Credit Level: G. Credit Hrs: 2.00

26MP972**Radiological Sciences Lab I**

Selected laboratory experiments including surveys and calibrations of radiation units for diagnostic radiology, nuclear medicine, and therapeutic oncology. Credit Level: G. Credit Hrs: 2.00-4.00

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Medical Physics**26MP973****Radiological Sciences Lab II**

See 26MP972. Prereq: 26MP972. Credit Level: G. Credit Hrs: 2.00-4.00

26MP981**Special Topics - Treatment Planning**

Extend student knowledge of use of ionizing radiation for therapeutic gain, detailed information on specialized radiation therapy treatment. Credit Level: G. Credit Hrs: 3.00

26MP982**Special Topics - Quality Assurance**

Will include initial acceptance of treatment units and continuing quality assurance of treatment units. Includes daily, weekly, monthly, annual quality assurance for proper completion of therapeutic prescription. Credit Level: G. Credit Hrs: 3.00

26MP983**Special Topics - Regulatory Issues**

Detailed review of applicable regulatory issues associated with radiation therapy, regulatory roles of USNRC, USFDA, state agencies and issues which arise from hospital accreditation issues. Credit Level: G. Credit Hrs: 3.00

26MP984**Special Topics in Nuclear Medical Physics**

Extend knowledge of nuclear medicine to clinical applications as well as imaging processing, quality assurance and radiation protection. Includes role of medical physicist in quality assurance and radiation protection. Credit Level: G. Credit Hrs: 3.00

26MP985**Special Topics in Diagnostic Radiological Physics**

Extend students knowledge of clinical diagnostic radiological physics and issues of image processing, quality assurance and radiation protection. Credit Level: G. Credit Hrs: 3.00

26MP989**Advanced Imaging Physics**

The course will extend the students knowledge of a particular aspect of diagnostic radiological physics. Topics will be selected on the basis of the interest of instructor and/or students. Credit Level: G. Credit Hrs: 3.00

26MP991**Research in Radiological Sciences**

Selected research projects in diagnostic and therapeutic radiology, radiologic physics, nuclear medicine and radiobiology. Credit Level: G. Credit Hrs: 1.00-15.00

26MP992**Seminar: Current Research in Radiological Sciences**

Reading, presentation, and critical discussion of recent research contributions in the radiological sciences. Credit Level: G. Credit Hrs: 1.00

26MP993**Clinical Medical Physics**

Clinical experience in areas of physics applied to diagnostic radiology, therapeutic radiology, and nuclear medicine. Credit Level: G. Credit Hrs: 1.00-15.00

26MP995**Clinical Aspects of Treatment Planning**

The course will familiarize students with clinical goals for radiation therapy as related to various tumor systems. The students will gain an appreciation of the role of radiation therapy as a therapeutic agent as well as the role of radiation physicist. Credit Level: G. Credit Hrs: 3.00

26MP996**Clinical Aspects of Treatment Planning**

The course will familiarize students with clinical goals for radiation therapy as related to various tumor systems. The students will gain an appreciation of the role of radiation therapy as a therapeutic agent as

Medical Physics**26MP996****Clinical Aspects of Treatment Planning**

well as the role of radiation physicist. Credit Level: G. Credit Hrs: 3.00

26MP997**Clinical Aspects of Treatment Planning**

The course will familiarize students with clinical goals for radiation therapy as related to various tumor systems. The students will gain an appreciation of the role of radiation therapy as a therapeutic agent as well as the role of radiation physicist. Credit Level: G. Credit Hrs: 3.00

Neuroscience**26NS777****Scientific Writing for Neuroscientists**

This course is designed to provide students with a solid background in scientific communication skills as they relate to neuroscience research. Students will be familiarized with various forms of science writing, including manuscript preparation, grant preparation and review articles. Credit Level: G. Credit Hrs: 3.00

26NS778**Fundamentals of Neuroscience I**

This is the first half of a two-quarter course that will serve as an introduction to neuroscience for graduate students in the UC Neuroscience Graduate Program and interested students from other UC graduate programs. Fundamentals of Neuroscience I will provide an overview of our current understanding of molecular and cellular neuroscience. Credit Level: G. Credit Hrs: 4.00

26NS779**Fundamentals of Neuroscience II**

This is a second half of a two-quarter course that will serve as an introduction to neuroscience for graduate students in the UC NS Graduate Program and interested students from other UC graduate programs. Fundamentals of Neuroscience II is intended to integrate and extend topics covered in Fundamentals of Neuroscience I, and will provide an overview of our current understanding of neuroendocrine and motor systems, reward and addiction, and behavioral and cognitive neuroscience. Credit Level: G. Credit Hrs: 4.00

26NS830**Neuropharmacology**

This course covers the neurochemical mechanisms underlying the behavioral effects of psychoactive drugs. Reference to specific neurotransmitter systems and drugs are used to illustrate general principles. Topics include drug modulation of synaptic transmission; brain adaptations to chronic drug treatments; psychotherapeutic drugs and what they tell us about the etiology of brain disorders. Credit Level: G. Credit Hrs: 2.00

26NS840**Survey of Neuroscience Research**

Weekly research seminars by faculty to introduce incoming graduate students to research opportunities in neuroscience at the University of Cincinnati. This series of seminars will assist students in identification of laboratories in which they desire to do laboratory rotations and ultimately dissertation research. Credit Level: G. Credit Hrs: 1.00

26NS841**Brain and Behavior I**

The first quarter of a two quarter sequence that introduces the principles and concepts of nervous system organization: structural organization, cellular neurophysiology, neuropharmacology, sensory and motor systems, higher cortical functions. Required for Neuroscience PhD students. Credit Level: G. Credit Hrs: 4.00-10.00

26NS850**Introduction to Laboratory Research**

Laboratory research for graduate students who have not yet advanced to candidacy. Credit Level: G. Credit Hrs: 1.00-12.00

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Neuroscience**26NS851****Introduction to Laboratory Research**

See 26NS850. Credit Level: G. Credit Hrs: 1.00-12.00

26NS852**Introduction to Laboratory Research**

See 26NS850. Credit Level: G. Credit Hrs: 1.00-12.00

26NS861**Brain and Behavior II**

An overview of human neurological and psychiatric disorders through the various stages of human development, including seizures, schizophrenia, substance abuse, Alzheimer's disease, Parkinson's disease and other movement disorders. The course is offered during a four-week concentrated block of time. Perm of Instructor. Credit Level: G. Credit Hrs: 4.00-10.00

26NS901**Neuroscience Seminar**

Formal presentations of current research in neuroscience will be given by speakers from both UC and other institutions. Credit Level: G. Credit Hrs: 1.00

26NS902**Neuroscience Seminar**

See 26NS901. Credit Level: G. Credit Hrs: 1.00

26NS903**Neuroscience Seminar**

See 26NS901. Credit Level: G. Credit Hrs: 1.00

26NS910**Neuroscience Journal Club**

This course will emphasize critical analysis of current issues in neuroscience research. Presentations will be made by students, faculty and outside speakers and group discussion is encouraged. Credit Level: G. Credit Hrs: 1.00

26NS911**Neuroscience Journal Club and Ethics Module**

See 26NS910. Credit Level: G. Credit Hrs: 1.00

26NS912**Neuroscience Journal Club**

See 26NS910. Credit Level: G. Credit Hrs: 1.00

26NS930**Advanced Topics in Neuroscience**

A didactic course intended to provide an in-depth analysis of the history, methodology, and/or current research in a specified topic in neuroscience. Credit Level: G. Credit Hrs: 1.00-4.00

26NS931**Neuronal Signal Transmission**

Starting with the generation of an action potential (AP), the first half of this course describes in detail the mechanisms by which the electrical activity of an AP is converted into the release of neurotransmitter at the presynaptic nerve terminal, followed by the induction of ionic conductances at the postsynaptic terminal and finally how that information is transferred to the cell body of the target neuron. The second half of the course considers other types of signal transduction by which extracellular signals such as hormones and growth factors give rise to intracellular second messengers. A short section on cellular immunology is also included. Credit Level: G. Credit Hrs: 1.00-4.00

26NS940**Advanced Study in Neuroscience**

Individualized readings or research in a specified topic in neuroscience. This course will allow students to study topics independently under the direction of faculty who have expertise in that area. Credit Level: G. Credit Hrs: 1.00-12.00

Neuroscience**26NS999****Dissertation Research**

Laboratory research for graduate students who have advanced to candidacy. Credit Level: G. Credit Hrs: 1.00-12.00

Occupational Medicine**26OCCM746****Survey of Public Health**

An overview of various topics in public health, including health services administration, communicable disease, epidemiology, chronic disease epidemiology, and other issues of current public health concern suitable for both undergraduate and graduate students with wide variety of health care career interests. Credit Level: G. Credit Hrs: 3.00

26OCCM748**Occupational Health Management**

The course will cover the principles in the development of a business plan in occupational health, including the basics of financial statements and projections, marketing and occupational health information systems. Credit Level: G. Credit Hrs: 3.00

26OCCM773**The Skin and the Environment**

Lectures and discussions of basic science aspects of cutaneous reactions to environmental stress; clinical characteristics of environmental skin diseases and injuries; hazard identification, clinical management, prevention and control of environmental skin diseases and injuries. Credit Level: G. Credit Hrs: 2.00

26OCCM783**Occupational and Environmental Health Law**

Overview of laws related to occupational and environmental health, including workers' compensation, toxic tort litigation, Americans with Disabilities Act, Family Medical Leave Act, Occupational Safety and Health Act, and the role of scientific experts. Credit Level: G. Credit Hrs: 1.00

26OCCM786**Basics of Occupational Medicine I**

A course designed to be an entry level, overview of occupational medicine for physicians, industrial hygienists, nurses and other health professionals. Credit Level: G. Credit Hrs: 2.00

26OCCM787**Special Topics - Occupational Medicine - Preventive Medicine**

Seminars or tutorial sessions dealing with special topics in occupational medicine related to research and application basic to field of environmental health. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM788**Special Topics - Occupational Medicine - Basics of Environmental Medicine**

See 26OCCM787. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM789**Special Topics - Occupational Medicine -**

See 26OCCM787. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM790**Special Topics - Respirators & Respiratory Protection**

See 26OCCM854. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM791**Special Topics-Occupational Medicine**

See 26OCCM787. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM844**Pulmonary Function Testing**

Principles of pulmonary function testing including basic spirometry, lung volume and diffusion studies, specific and nonspecific challenge testing, A.T.S. standards and interpretation of test results. Credit Level: G. Credit Hrs: 1.00-10.00

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Occupational Medicine**26OCCM849****The Lung and the Environment I**

Lectures and discussions on etiology, pathogenesis, evaluation and treatment of lung diseases of occupational and environmental origin. Credit Level: G. Credit Hrs: 2.00

26OCCM850**The Lung and the Environment II**

See 26OCCM849. Credit Level: G. Credit Hrs: 2.00

26OCCM854**Respirators and Respiratory Protection I**

This course will enable students to identify the proper type of respiratory protection to use based upon the hazards that exist. Government standards will be presented along with demonstrations of fit testing techniques. Problem solving and "hands-on" techniques will be stressed. Credit Level: G. Credit Hrs: 2.00

26OCCM877**Occupational Pulmonary Clinic**

A clinical practice rotation designed for physicians to achieve proficiency in completing an occupational history and exam with special emphasis on lung toxins, ordering and interpreting appropriate pulmonary and radiographic tests, using acquired information to develop a complete differential for lung disorders, and forming a clinically and legally appropriate opinion of work relatedness. Credit Level: G. Credit Hrs: 2.00-4.00

26OCCM886**Special Topics -- Occupational Medicine -**

See 26OCCM787. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM887**Special Topics - Occupational Medicine_-**

See 26OCCM787. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM888**Occupational Dermatology Clinic**

A clinical practice rotation designed for physicians to achieve proficiency in understanding common occupational skin problems and the physical, chemical and biological sources of these problems. Develop skills in differentiating between occupational and non-occupational skin disease and treatment/prevention of common occupational skin problems. Credit Level: G. Credit Hrs: 2.00-4.00

26OCCM889**Hospital Occupational Health Clinic**

A clinical practice rotation designed for physicians to acquire knowledge of hazards present in hospital environment and develop the ability to recognize and treat common infectious exposures. Develop ability to design and implement site specific health promotion and surveillance programs. Acquire knowledge of psychological and social stresses of work in hospital environment along with role of Employee Assistance Programs. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM890**Special Topics - Occupational Medicine**

see S.T. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM891**Special Topics - Introduction to Forensic Disability Evaluation and Management**

This course will focus on medical forensic evaluation of impairment and disability claims with focus on specific aspects of the medical and physical examination, review of medical records, treatment modalities assessment and options, diagnostic studies available to evaluate disabling conditions... Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM892**Special Topics - Occupational Medicine - Emergency Preparedness**

See 26OCCM787. Credit Level: G. Credit Hrs: 1.00-15.00

Occupational Medicine**26OCCM896****Basics of Occupational Medicine II**

A course designed to provide an in-depth survey of pertinent issues and topics in the practice of Occupational Medicine, built upon knowledge gained from Basics of Occupational Medicine I. For physicians, nurses and healthcare professionals. Credit Level: G. Credit Hrs: 2.00

26OCCM899**General Occupational Medicine Clinic**

A clinical practice rotation designed for physicians to achieve proficiency in general occupational medicine principles including patient evaluations to recognize common occupational illnesses and to determine if illnesses or complaints are occupationally related. Credit Level: G. Credit Hrs: 2.00-6.00

26OCCM925**Occupational Medicine Resident - Industrial Days**

Rotation through the medical department of a prominent local or national industry -- active participation in medical routine, related personnel functions. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM926**Occupational Medicine Resident - Industrial Days**

See 26OCCM925. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM927**Occupational Medicine Resident - Industrial Days**

See 26OCCM925. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM928**Occupational Medicine Resident - Industrial Days**

See 26OCCM925. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM929**Occupational Medicine Resident - Non-Industrial Clinical Experience**

This course is designed for Occupational Medicine Residents to supplement their general medical clinical skills by rotating through a variety of non-occupational clinical settings. The most common clinical experiences in the past have been Physical Medicine and Rehabilitation, Orthopedics, Emergency Medicine, and Ophthalmology. Arrangements are made with participating clinical departments for each resident on an individual basis. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM930**Occupational Medicine Resident - Non-Industrial Clinical Experience**

See 26OCCM929 for course description. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM931**Occupational Medicine Resident - Non-Industrial Clinical Experience**

See 26OCCM929 for course description. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM932**Occupational Medicine Resident - Non-Industrial Clinical Experience**

See 26OCCM929 for course description. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM986**Special Topics -- Occupational Medicine -- NIOSH Industrial Days**

See 26OCCM787. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM987**Basics of Environmental Medicine**

A comprehensive overview of environmental medicine, appropriate for multidisciplinary student participation, directed at the interactive disciplines of medicine, nursing, epidemiology, industrial hygiene, toxicology, environmental engineering and safety and other related disciplines. Two credit hours course features didactic lectures by

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Occupational Medicine**26OCCM987****Basics of Environmental Medicine**

speakers who are experts in the field. Third hour will be required for the Occupational Medicine residents. Credit Level: G. Credit Hrs: 2.00-3.00

26OCCM988**Special Topics - Occupational Medicine**

See 26OCCM787. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM989**Special Topics - Occupational Medicine**

See 26OCCM787. Credit Level: G. Credit Hrs: 1.00-15.00

26OCCM990**Special Topics - Occupational Medicine**

See 26OCCM787. Credit Level: G. Credit Hrs: 1.00-15.00

Occupational Safety and Ergonomics**26OSE744****Biomechanical and Physiological Aspects of Muscular Activity**

Biomechanics of human static posture and dynamic motion, cardiovascular and metabolic cost of muscular activity, biomechanics of trauma, spinal mechanics, and biomechanical modelling. Credit Level: G. Credit Hrs: 3.00

26OSE748**Introduction to Measurement Techniques in Ergonomics**

Provide students with an understanding and working knowledge of how to evaluate and control the risk of musculoskeletal disorders of the low back and upper extremity in the design of industrial workplaces. Risk & exposure assessment techniques will be discussed. Credit Level: G. Credit Hrs: 3.00

26OSE756**Special Topics -- Introduction to Measurement Techniques in Ergonomics**

Seminars or tutorial sessions dealing with special topics in occupational safety as related to research and application basic to the field of environmental health. Credit Level: G. Credit Hrs: 1.00-15.00

26OSE757**Special Topics - Occupational Safety -Introduction to Ergonomic Laboratory Research**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

26OSE758**Special Topics - Occupational Safety - Human Vibration**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

26OSE759**Special Topics - Occupational Safety**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

26OSE760**Special Topics - Occupational Safety**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

26OSE792**Principles of Ergonomics**

Concepts, criteria to achieve optimal mutual fitting of worker capabilities to job. Biomechanics, heat, cold, shift work, fatigue, anthropometry, task analysis, cumulative trauma disorders, work station/tool design. Credit Level: G. Credit Hrs: 3.00

26OSE856**Special Topics -- Occupational Safety**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

26OSE857**Special Topics - Occupational Safety**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

Occupational Safety and Ergonomics**26OSE858****Special Topics - Occupational Safety**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

26OSE859**Special Topics - Occupational Safety**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

26OSE860**Special Topics - Occupational Safety**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

26OSE873**Basic Industrial Safety**

Content, administration and implementation of safety programs in industry. Covers good practices and governmental regulations. Credit Level: G. Credit Hrs: 2.00

26OSE956**Special Topics -- Occupational Safety**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

26OSE957**Special Topics - Occupational Safety**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

26OSE958**Special Topics - Occupational Safety**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

26OSE959**Special Topics - Occupational Safety**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

26OSE960**Special Topics - Occupational Safety**

See 26OSE756. Credit Level: G. Credit Hrs: 1.00-15.00

Public Health**26PH701****Introduction to Evidence Based Public Health**

This course will include an orientation to the US public health system, current concepts and issues, and major contemporary public health problems. A second content theme will include a brief overview of the development of the quality improvement movement in medicine, resulting in the evidence based public health movement. These two segments will be integrated as students learn to apply the principles of an evidence based approach to current public health problems in the greater Cincinnati area. A seminar style of teaching, employing small group discussion of cases, will be employed. Perm of Department. Credit Level: G. Credit Hrs: 4.00

26PH702**Health Systems and Health Policy**

Course content will include the application of political science and economics to the planning, financing, organization, administration, and evaluation of policy affecting the public's health. Topics will include the organization and effectiveness of United States health care and public health systems; determinants of health, need, and utilization; quality, costs and accessibility of care; development of public policy concerning medical care and public health, emergency preparedness, and the relationship between public decisions and the marketplace as they concern the public's health. Perm of Department. Credit Level: G. Credit Hrs: 4.00

26PH703**Introduction to Population Health and Disease**

Course content will include distributions, determinants, and natural history of disease, disabilities and death in human populations; the characteristics and dynamics of health and illness in human populations, including the application of genomic issues and studies to

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Public Health**26PH703****Introduction to Population Health and Disease**

public health. A seminar style of teaching, employing small group discussion of cases, will be employed. Perm of Department. Credit Level: G. Credit Hrs: 4.00

26PH704**Legal and Ethical Issues in Public Health**

Course content will include public health law and the uses of law to promote the public's health; the ethical and legal bases for public health practice and research, including the belief that people are interdependent on each other and the environment; the priority of addressing the root causes of health and illness; and the importance of communicating public health messages in ways that respect the values, opinions, beliefs and practices of people in various communities. Perm of Department. Credit Level: G. Credit Hrs: 4.00

26PH705**Statistical Analysis for Public Health Practitioners**

Public Health workers need to read and interpret public health and medical literature to keep abreast of the latest methods. This course will provide an introduction of basic concepts of statistics, methods of statistical analysis and tools of statistical computation. The goal is to help students understand the language of statistics and the art of statistical investigation; perform basic statistical analysis of their own research; and read and evaluate analytical results in health and research articles. Perm of Department. Credit Level: G. Credit Hrs: 4.00

26PH706**The Environment and the Public's Health**

Starting with a review of the major human and natural activities that threaten the public's health (overpopulation, climate change, peak oil, etc) this course will examine the causal links between chemical, physical, and biological agents in the environment and their impact on human health. The basic principles of toxicology will be presented including dose-response relationships, absorption, distribution, metabolism, and excretion of chemicals. The overall role of environmental risks in the pattern of human disease, both nationally and internationally, will be covered. The engineering and policy strategies, including risk assessment, used to evaluate and control these risks will be introduced. Perm of Department. Credit Level: G. Credit Hrs: 4.00

26PH707**Community Assessment and Programming**

This course is designed to assist students in acquiring skills related to defining a health problem, conducting an assessment, and developing, implementing and evaluating health programs. Students will acquire the skills needed to assess the health patterns of communities and populations in partnership with key members of the community that encompasses the culture, geography, political structure, environment and assets of the community. Students will learn methods to obtain and interpret information regarding the risks and benefits to the community/population assessment methods. Students will gain knowledge needed to develop management and leadership skills required to build community led interventions aimed at improving the overall health of an identified community or population. Students will build their knowledge on public health models and methods for conducting population based assessments and program planning. Perm of Department. Credit Level: G. Credit Hrs: 4.00

26PH711**Leadership Development In Public Health**

This course will include the development of management skills and leadership attitudes and competencies which allow the promotion and implementation of sound health policy and practices. Concepts covered include stewardship, equity, social justice and accountability. Perm of Department. Credit Level: G. Credit Hrs: 4.00

26PH713**Policy and Advocacy For Public Health**

An advanced course for those interested in the role of policy and

Public Health**26PH713****Policy and Advocacy For Public Health**

advocacy in improving the public's health at the state and national levels. Students will understand the roles of legislation and regulation and how to effect these processes, as well as how these processes in turn effect public health's ability to perform its core functions. Students will aid in the development of policy briefs on targeted issues. Perm of Department. Credit Level: G. Credit Hrs: 4.00

26PH716**Quality in Healthcare**

This course examines key concepts and methods of healthcare quality management. Topics include an overview of quality challenges in health systems; tools, models and techniques for quality improvement; quality measurement approaches including data collection, analysis, and statistical control methods; leadership and strategic planning for quality; and, techniques for creating an organizational culture that fosters quality. The course will focus on interpretation of the existing knowledge and methodologies for application at the clinical micro system level. Credit Level: G. Credit Hrs: 4.00

26PH721**Understanding Vulnerable Populations**

This course aims to examine concepts and methods in the study of vulnerability in health and in particular, strategies and future directions for resolving disparities in health care access, quality, and health status at the community and national levels. Vulnerability risks will be defined, and implications for public health and social and human services delivery will be discussed. A comprehensive approach incorporating individual and community factors and current government and private initiatives will be reviewed. Also included will be interpretation of the existing knowledge and programs for application at the community level. Perm of Department. Credit Level: G. Credit Hrs: 4.00

26PH723**Global and International Health Systems**

Course will provide an overview of global and national health systems to provide the student with a perspective on how national and other societies approach health and health care including cultural, economic and political systems. In addition to the World Health Organization, certain UN agencies and NGOs, national systems from the developed and under- developed world will be examined and contrasted, including those of England, Canada, China and Cuba. Perm of Department. Credit Level: G. Credit Hrs: 4.00

26PH791**Public Health Practicum**

The Practicum is an individually-planned, supervised, and evaluated practice experience through which the student will develop an understanding of and appreciation for practice in a public health-related environment relevant to their chosen concentration. The typical practicum will occur at a public health agency with the student supervised on-site by a qualified preceptor who may have an adjunct faculty appointment. The Practicum site will be selected by the student from a listing of available, approved sites within their concentration of choice and must be approved by their advisor. Projects or problems identified during the Practicum may well lead directly into the Capstone. The practicum is set up with three sections. One for each concentration. Section 001 is for the health education and Section 002 is for the Leadership Concentration. Perm of Department. Credit Level: G. Credit Hrs: 4.00

26PH798**Public Health Capstone I**

The culminating experience is the mechanism by which the student demonstrates her/his ability to synthesize and integrate the knowledge and skills gained throughout the program. It allows the student to apply theory and principles in a situation that approximates some aspect of professional problem-solving practice and serves as a means by which faculty judge whether the student has mastered the body of knowledge and can demonstrate proficiency in the required competencies. Many different models are acceptable, including written or oral comprehensive

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Public Health**26PH798****Public Health Capstone I**

examinations, supervised practice experiences, a major written paper such as a thesis or an applied research project, development of case studies, extended internship with portfolio, capstone seminars and others. The capstone will be proposed by the student with the approval of her/his advisor; a faculty supervisory committee will be identified to oversee the student's progress through the capstone. Students will typically register for the capstone across more than one term. Perm of Department. Credit Level: G. Credit Hrs: 2.00-6.00

26PH799**Public Health Capstone II**

The culminating experience is the mechanism by which the student demonstrates her/his ability to synthesize and integrate the knowledge and skills gained throughout the program. It allows the student to apply theory and principles in a situation that approximates some aspect of professional problem-solving practice and serves as a means by which faculty judge whether the student has mastered the body of knowledge and can demonstrate proficiency in the required competencies. Many different models are acceptable, including written or oral comprehensive examinations, supervised practice experiences, a major written paper such as a thesis or an applied research project, development of case studies, extended internship with portfolio, capstone seminars, and others. The capstone will be proposed by the student with approval of her/his advisor; a faculty supervisory committee will be identified to oversee the student's progress through the Capstone. Students will typically register for the capstone across more than one term. Perm of Department. Credit Level: G. Credit Hrs: 2.00-6.00

Pathobiology and Molecular Medicine**26PMM599****Introductory Immunology**

This course is intended to be a comprehensive introductory level immunology course for graduate students, advanced undergraduates, technicians and fellows. It will cover basic immunochemistry, cellular, and molecular immunology. While the course has no official prerequisites, students will find that some background in basic biochemistry, cell biology and molecular genetics would be desirable. BoK: NS. Credit Level: U, G. Credit Hrs: 3.00

26PMM721**Methods in Biomedical Research**

Rigorous laboratory course designed to familiarize the aspiring scientist in the biologic sciences with contemporary research methods (including molecular biologic techniques) as they are applied to the study of human disease. Credit Level: G. Credit Hrs: 5.00

26PMM884**Histology for Research**

A hands-on graduate level course for researchers who use transgenic mice as models of gene function or human disease. After taking this course, the student will have an understanding of the structure and function of all major organ systems, and will be proficient in the comparative anatomy of human and rodent tissues. Previous coursework in physiology is beneficial, but not required. Course may be taken for 1 credit (histologic identification only) or 3 credits (histologic identification and basic organ system physiology. Credit Level: G. Credit Hrs: 1.00-3.00

26PMM891**Research Rotation-Fall**

Laboratory work, readings in research aspects of pathobiology and molecular medicine. Specific area of concentration determined by consultation with staff. Credit Level: G. Credit Hrs: 3.00-5.00

26PMM892**Research Rotation-Winter**

See 26PMM891. Credit Level: G. Credit Hrs: 3.00-5.00

Pathobiology and Molecular Medicine**26PMM893****Research Rotation-Spring**

See 26PMM891. Credit Level: G. Credit Hrs: 3.00-5.00

26PMM894**Research Rotation-Summer**

See 26PMM891. Credit Level: G. Credit Hrs: 3.00-5.00

26PMM899**Immunology of Disease**

Basic cellular and immunologic mechanisms related to the pathogenesis of disease, including infectious agents, cancer, autoimmunity, and allergic reactions. Prereq: 26PMM599. Credit Level: G. Credit Hrs: 2.00

26PMM900**Research rotation in industry or government**

_A 10-week laboratory rotation in a regional government or industry laboratory for students interested in exploring alternative career paths to academic research. Opportunities vary, so students are encouraged to notify the Program Director as early as possible. Restricted to students in the Pathobiology & Molecular Medicine graduate program. Credit Level: G. Credit Hrs: 5.00

26PMM971**Thesis Research in Pathobiology and Molecular Medicine**

Hours and credits to be arranged. Offered each quarter. Restricted to P&MM students who have advanced to candidacy. Credit Level: G. Credit Hrs: 1.00-15.00

26PMM979**Research Seminar**

A seminar-type class offering discussion of contemporary papers in experimental pathobiology and molecular medicine. Emphasis is on learning to read scientific literature, to interpret data, and to understand concepts of experimental design. Perm of Instructor. Credit Level: G. Credit Hrs: 1.00

26PMM980**Research Journal Club**

This course is designed to teach students how to select and read scientific literature. It will include group discussions on the content of the literature including critical evaluation of data and experimental design. Credit Level: G. Credit Hrs: 1.00

26PMM981**Molecular Pathogenic Mycology**

The goal of this course is to provide information on the basic biology, genetics, and clinical importance of the major human fungal pathogens. Perm of Instructor. Credit Level: G. Credit Hrs: 2.00

26PMM983**Pathobiology of Lipid-related Disease**

Pathobiology of Lipid-related Disease is an intensive course designed for graduate students serious about obtaining a firm understanding of the basics of lipid structure/function, metabolism and the pathological conditions that arise from mishandling of lipids in the body. Perm of Instructor. Credit Level: G. Credit Hrs: 2.00

26PMM989**MOLECULAR PATHOGENIC MYCOLOGY JOURNAL CLUB**

An advanced topics course that uses a journal club format to discuss recent advances in the basic biology and genetics of the major human fungal pathogens. Credit Level: G. Credit Hrs: 1.00

26PMM990**Endocrine and Related Cancers**

This course is designed for graduate students who are interested in the molecular mechanisms and unique characteristics of endocrine and related cancers, such as breast, prostate, thyroid, testicular and ovarian cancers. Prereq: 26CB880. Credit Level: G. Credit Hrs: 1.00

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Physician Scientist Training Program**26PSTP741****Medical Histology and Cell Biology**

The normal microscopic structure of cells, tissues and organs with emphasis on structural-functional relationships. Credit Level: G. Credit Hrs: 3.00

26PSTP742**Gross Anatomy**

Study of the body walls, cavities, and lower limb, and head, neck, and upper limb of the human body in the dissecting room; supplemented by lectures. Credit Level: G. Credit Hrs: 3.00

26PSTP743**Biological Chemistry**

Chemistry of proteins, enzymes and other macromolecules; bioenergetics, cellular and mammalian metabolism, metabolic control mechanisms, molecular genetics and nutrition. Credit Level: G. Credit Hrs: 3.00

26PSTP744**Physiology**

Subcellular organelles, cells, tissues, organ systems and their integrated activity. Focus: cellular, muscle, cardiac, circulatory, renal, respiration, the physiology acid base, and the physiology of energy balance and temperature regulation. Credit Level: G. Credit Hrs: 3.00

26PSTP745**Clinical Foundations of Medical Practice I**

This course is designed to prepare MD/PhD students for their clinical years. Credit Level: G. Credit Hrs: 3.00

26PSTP746**Brain & Behavior I**

This course introduces the principles and concepts of nervous system organization: structural organization, cellular neurophysiology, neuropharmacology, sensory and motor systems, higher cortical functions. Credit Level: G. Credit Hrs: 9.00

26PSTP747**Pathology of Disease**

Lecture and seminar with basic concepts of pathobiology, including cell degeneration, inflammation, toxic, immunologic, infectious, and environmental injury and neoplasia. Credit Level: G. Credit Hrs: 3.00-4.00

26PSTP748**Pharmacology & Therapeutics**

Principles of drug action and the rational use of drugs in clinical disorders. Lectures, demonstrations, and conferences. Credit Level: G. Credit Hrs: 2.00-4.00

26PSTP749**Medical Microbiology**

A study of the biology of microorganisms with emphasis on important examples of infectious agents (bacteria, viruses and fungi); the principles of immunology with stress placed on the relationship between host and microbe; the role of microbiology in clinical medicine and surgery. Credit Level: G. Credit Hrs: 3.00-4.00

26PSTP750**Brain & Behavior II**

An overview of human neurological and psychiatric disorders through the various stages of human development, including seizures, schizophrenia, substance abuse, Alzheimer's disease, Parkinson's disease and other movement disorders. The course is offered during a four-week concentrated block of time. Credit Level: G. Credit Hrs: 3.00-4.00

26PSTP751**Clinical Foundations of Medical Practice II**

This is required for MD/PhD students. It is designed to prepare medical students for their clinical years. Credit Level: G. Credit Hrs: 3.00-4.00

Physician Scientist Training Program**26PSTP901****Seminar Medical Science**

Under the direction of a faculty advisor, students present, discuss and analyze current literature. Credit Level: G. Credit Hrs: 1.00

26PSTP902**Biomedical Science Journals**

See Seminar Medical Sciences, 26PSTP901. Credit Level: G. Credit Hrs: 1.00

26PSTP951**Research**

Basic science or clinical research. Credit Level: G. Credit Hrs: 1.00-12.00

26PSTP952**Research**

Basic science or clinical research. Credit Level: G. Credit Hrs: 1.00-12.00

26PSTP953**Research**

Basic science or clinical research. Credit Level: G. Credit Hrs: 1.00-12.00

26PSTP954**Research**

Basic science or clinical research. Credit Level: G. Credit Hrs: 1.00-12.00

Toxicology**26TOX771****Biological Effects of Air Pollutants**

Effects of ambient and industrial air pollutants on humans, laboratory animals and plants. Offered alternate years. Credit Level: G. Credit Hrs: 2.00

26TOX782**Survey of Environmental Toxicology**

Entry, action, and elimination of toxic chemicals; dose-response relationships; design, interpretation and application of the data. Credit Level: G. Credit Hrs: 3.00

26TOX791**Special Topics -- Current Methods in In Vivo Toxicology**

Seminars or tutorial sessions dealing with special topics in toxicology as related to research and application basic to field of environmental health. Credit Level: G. Credit Hrs: 1.00-15.00

26TOX792**Special Topics - EGMT Core Course - BM Section**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

26TOX793**Special Topics - Historical Perspectives in Analytical Toxicology**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

26TOX794**Special Topics - Occupational Toxicology**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

26TOX795**Special Topics - Toxicology - Survey of Occupational and Environmental Toxicology II**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

26TOX837**Toxicology Seminar**

Required for graduate students in the Toxicology PhD program. Each student is required to present a research seminar based on literature or his/her own research. Credit Level: G. Credit Hrs: 1.00

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Toxicology**26TOX838****Toxicology Seminar**

See 26TOX837. Credit Level: G. Credit Hrs: 1.00

26TOX839**Toxicology Seminar**

See 26TOX837. Credit Level: G. Credit Hrs: 1.00

26TOX841**Development of Scientific Hypotheses**

Discussions of current research articles in the fields of environmental genetics, molecular toxicology, and molecular biology. Credit Level: G. Credit Hrs: 2.00

26TOX848**Introduction to Bioinformatics and Biocomputing**

An introduction to the principles of organization and analysis of biological information using computational methods. Comparison of internet resources for biological research, including molecular structure and function determination and phylogenetic analysis. Credit Level: G. Credit Hrs: 3.00

26TOX851**Environmental Genetics and Molecular Toxicology (EGMT)Core Course**

Focus on gene-toxicant interactions. Overview of epidemiology; introduction to the principles of pharmacogenetics, exposure assessment, and biotransformation. Credit Level: G. Credit

26TOX852**Environmental Genetics and Molecular Toxicology (EGMT) Core Course**

Focus on gene-toxicant interactions. See 26TOX851. Need permission of instructor or class 26TOX851. Credit Level: G. Credit Hrs: 4.00

26TOX878**Applied Risk Assessment**

Topics include exposure-response, dose-response, risk characterization of carcinogenic and non-cancer outcomes, and uncertainty assessment. Computer programs such as Crystal Ball and GIS-ArcView are used to evaluate risk using real-world scenarios for lead and organic solvents. Credit Level: G. Credit Hrs: 3.00

26TOX883**Environmental Mutagenesis and Carcinogenesis**

Lectures on current concepts of the mechanism of action of environmental mutagens and carcinogens, and their application in detection and testing. Credit Level: G. Credit Hrs: 3.00

26TOX885**Neurobehavioral Toxicology**

Examinations of behavioral, neurophysiological and neurochemical effects associated with environmental toxicants. Credit Level: G. Credit Hrs: 3.00

26TOX890**Mechanisms in Environmental Chemical Carcinogenesis**

Lecture and discussion of chemical carcinogens in the environment, trends in research, mechanisms of action of carcinogens at the cellular and molecular level, and methods of analysis. Credit Level: G. Credit Hrs: 3.00

26TOX891**Special Topics - Toxicology**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

26TOX892**Special Topics - Toxicology**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

26TOX893**Special Topics - Toxicology**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

Toxicology**26TOX894****Special Topics - Toxicology**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

26TOX895**Special Topics - Toxicology**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

26TOX987**Risk Assessment**

Lectures deal with hazard identification, dose-response assessment, exposure assessment and risk characterization. Current literature and Federal Guidelines are the basis for lectures. Credit Level: G. Credit Hrs: 4.00-5.00

26TOX991**Special Topics - Toxicology**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

26TOX992**Special Topics - Toxicology**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

26TOX993**Special Topics - Toxicology**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

26TOX994**Special Topics - Toxicology**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

26TOX995**Special Topics - Toxicology**

See 26TOX791. Credit Level: G. Credit Hrs: 1.00-15.00

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