PATHOLOGY & MICROBIOLOGY (PAMM)

PAMM 813 PRINCIPLES OF BIOSAFETY 3 Credit Hours
This course is designed for graduate students and health professionals to explore biosafety principles and practices with the purpose of developing a Biorisk Management approach to biosafety. This will enable participants to "effectively identify, monitor and control the laboratory biosafety and biosecurity aspects of activities. This integrated education will allow the student to recognize risky activities from unintentional and intentional incidents involving biological materials and develop mitigation strategies to reduce exposures to these materials. The student will participate in hands on training using engineering controls as well as administrative controls. Competencies in donning and doffing personal protective equipment and use of a biosafety cabinet will be discussed and assessed. Participants will also learn how to develop a risk mitigation plan following the identification of hazards and risk assessment. The targeted audience include doctoral students interested in occupational health, researchers, professional students, and the biosafety profession. Typically Offered: SPRING

PAMM 825 INTRODUCTION TO R PROGRAMMING FOR BIOMEDICINE 3 Credit Hours
The main objective of this course is to introduce data manipulation methods for health professionals by using R programming language. Major topics include basic concepts of R, data manipulation and processing, statistical analysis, graphical presentation and simulation, genomic databases retrieval, and commonly used R packages. Cross List: BMI 825
Typically Offered: FALL/SPR

PAMM 830 CLINICAL LABORATORY MANAGEMENT 3 Credit Hours
An introduction to the theory, practical application and evaluation of laboratory management principles in health care and laboratory information systems, research, educational methodology, quality control, ethics, laboratory operations, and laboratory accreditation standards. Opportunities for building critical thinking, problem-solving, teamwork, communication, professionalism, research, management, and leadership skills are provided. Prerequisite: Enrolled in MS in PAMM Program focused on CLS training, and permission of instructor. Typically Offered: FALL

PAMM 857 INTRODUCTORY IMMUNOLOGY 2 Credit Hours
A study of the basic concepts and mechanisms of modern immunology with discussion of the applications of these principles to the study of diseases. Typically Offered: SPRING

PAMM 871 ANTIBIOTICS: MECHANISMS OF ACTION AND RESISTANCE 3 Credit Hours
This course is designed to give students an in-depth understanding of how antibiotics inhibit growth in bacterial cells. Genetics of the mechanisms of resistance to multiple classes of antibiotics within both gram-negative and gram-positive bacteria will be covered extensively. In addition, pros and cons of various antimicrobial-resistance testing methodologies will be assessed and discussed. Prerequisite: Permission of instructor. Prior completion of PAMM 898 is suggested. Typically Offered: SPRING

PAMM 873 INTRO GENETIC SEQUENCE 2 Credit Hours
Fundamentals of using online search techniques for the analysis of genetic sequence databases. The course will be taught in UNMC computer clusters by lecture and by the completion of assignments using computer programs available on campus. Programming experience is not required. Prerequisite: Introduction to Computational Molecular Biology, undergraduate course in biochemistry or molecular biology, or permission of instructor. Typically Offered: SPRING

PAMM 880 PRINCIPLES AND METHODOLOGIES IN CANCER RESEARCH 2-3 Credit Hours
A survey of the biology and biochemical mechanisms underlying cancer development, prevention, and therapy. Prerequisite: Permission of instructor. Cross List: BMB 880, CRGP 880, PHSC 880. Typically Offered: FALL/SPR

PAMM 890 MOLECULAR BIOL VIRUSES 3 Credit Hours
The principles of molecular biology and their application to the study of virology will be presented. The contributions of virology to the understanding of general mechanisms of pathogenesis will be discussed. Typically Offered: FALL

PAMM 896 NON-THESIS RESEARCH 1-9 Credit Hours
Student research that is clearly distinct from ongoing or planned thesis/dissertation work, or research/lab rotations preformed prior to selecting a permanent advisor or supervisor. Typically Offered: FALL/SP/SU

PAMM 898 BACTERIAL GENETICS 3 Credit Hours
The principles of bacterial genetics including genome structure, DNA replication and recombination, transcription and translation, as well as quorum sending and environmental sensing. Instructor: Scot Ouellette, Ph.D. Typically Offered: SPRING

PAMM 899 MASTERS THESIS 1-9 Credit Hours
Independent student research related to the masters thesis. Typically Offered: FALL/SP/SU

PAMM 902 PROTEIN MASS SPECTROMETRY AND PROTEOMICS 3 Credit Hours
The concept and history of proteomics, basic components of mass spectrometry, protein identification and quantification techniques, proteomic analysis of post-translational modifications, protein-protein interactions and cellular organelles, as well as proteomics in medical applications. Includes laboratory work of identifying cheese proteins using mass spectrometry. Prerequisite: BRTP 821 and permission of instructor. Typically Offered: FALL

PAMM 910 BACTERIAL PATHOGENESIS 3 Credit Hours
The genetic mechanisms of bacterial pathogenesis in both Gram-positive and Gram-negative bacteria, as well as the immunological response of the host to these pathogens. Particular importance will be placed on major pathogens including Staphylococcus aureus, Salmonella enterica, pathogenic Escherichia coli, and Mycobacterium tuberculosis; however, lesser studied pathogens will also be discussed. Prerequisite: IPBS 801, 802, 803 Typically Offered: SPRING
PAMM 912 HUMAN SPECIFIC DISEASE MODELING IN MICE 2 Credit Hours
This course introduces the novel mouse models engrafted with human cells, to study human-specific diseases. The course covers research methodologies: 1. For the creation of specific mouse backgrounds that are compatible for the engraftment of human cell, tissue and tumors. 2. To study (a). human-specific infections and immune responses, (b). developmental biology and regeneration of human cells and tissues, and (c). therapeutics development.
Prerequisite: BRTP 822, BRTP 823, and permission of instructor.
Typically Offered: SPRING

PAMM 930 NEUROIMMUNOLOGY 3 Credit Hours
The objective of this course is to provide essential knowledge towards a better understanding of the principles of neuroimmunology and pharmacology as they apply to the pathogenesis and pharmacotherapeutics of neurodegenerative disorders and disorders in which the immune system is implicated.
Prerequisite: IPBS 801, 802, and 803 or equivalent; NSC 922 or 932.
Typically Offered: SPRING

PAMM 940 MOLECULAR BASIS OF DISEASE 3 Credit Hours
Beginning with an overview of human genetics, including classical and contemporary methods of genetic analysis, the course explores the relationship between genetic diversity and disease. Human biochemical genetics and inborn errors of metabolism illustrate how specific phenotypes result from specific gene changes. Genetic polymorphism, selection and fitness are also explored with regard to the interactions among human populations and with the environment.
Prerequisite: 800-level biochemistry, or IPBS 801 and 802 (may be in progress).
Typically Offered: SPRING

PAMM 950 SPECIAL TOPICS 1-3 Credit Hours
Advanced study of current concepts and findings in selected areas of pathobiology, microbiology, and immunology. Includes a review of current literature, research and clinical problems.
Prerequisite: Permission of instructor.

PAMM 950B SPECIAL TOPICS/CLINICAL LABORATORY MANAGEMENT 1-3 Credit Hours
Special Topics/CLINICAL LABORATORY MANAGEMENT
Typically Offered: FALL/SP/SU

PAMM 955 ADVANCED IMMUNOBIOLOGY 3 Credit Hours
Conceptual study of cellular and biomolecular immunology. Includes mechanisms of immune recognition, regulatory and effector functions, interleukins and clinical immunology, with discussion of current literature.
Prerequisite: PAMM 857, BRTP 824, or permission of instructor.
Typically Offered: FALL

PAMM 970 SEMINAR 1 Credit Hour
Attendance at weekly seminars offered by the department/program, or other activities specific to the degree program (contact the program director for more information).
Typically Offered: FALL/SP/SU

PAMM 992 ADV TOPICS IN IMMUNOLOGY, PATHOLOGY AND INFECTIOUS DISEASES 1 Credit Hour
Advanced study in one of several disciplines such as bacteriology, immunology, mycology, virology, cell biology, molecular biology, etc. This course will discuss literature directly published to the broad area of the Research Topic discussed during the semester. The broad topic will be decided by one of the invited Faculty with expertise in the area of research to be discussed during that semester. Student presenter will choose the paper and get it approved for presentation by the invited Faculty expert.
Typically Offered: FALL/SPR

PAMM 999 DOCTORAL DISSERTATION 1-15 Credit Hours
Independent student research related to the PhD dissertation. This course may be utilized before or after successful completion of the comprehensive exam.
Typically Offered: FALL/SP/SU