

REQUIRED for MOLECULAR & CELLULAR PATHOLOGY students

Course Number	Course Title	Term	Number Credits	Meeting Time
Path 581	Tissue, Cellular and Molecular Basis of Disease – Part I	WI	4	Lec: MT; 2:00-3:15 PM Lab: W 2-4:30 PM

Course content:

This course introduces students to basic pathophysiologic mechanisms, the molecular basis for disease and the morphologic expression of human disease. The course will begin with a review of normal histology and then focus on a rigorous presentation of cellular and molecular mechanisms which appear to be common to a number of diseases including cell response and injury, inflammation and immunity, infectious disease, disturbances of the circulation and neoplasia. Specific prototypic disease entities are then presented within the context of these mechanisms and the molecular events that govern their induction and maintenance. The course is presented in lecture and laboratory format, with the laboratory consisting of examination of glass slides. The lecturers direct student learning through discussion of the material presented in the laboratory assignments. It is a 4 credit course with 2 lectures (Mon and Tue 2-3:15) and 1 microscope lab (Wed 2-4:30) per week.

Pre-requisites:

Permission of Instructor

Course Director:

Hedwig Murphy, M.D., Ph.D.

Molecular and Cellular Pathology
Laura Hessler
763-6454

REQUIRED for MOLECULAR & CELLULAR PATHOLOGY students (Most MCP students take during 2nd year)

Course Number	Course Title	Term	Number Credits	Meeting Time
Path 582	Tissue, Cellular, and Molecular Basics of Disease – Part II	FA	3	MW;3-4:15 PM

Course content:

This is a team taught course consisting of 7 modules, each concerned with a different topic in Pathology. Faculty members will lecture on very new developments within a field and assign 3 recent papers. The students will present a critical analysis of the papers during an open discussion session. Topics include inflammation, DNA repair, fibrosis, cancer, aging, and more. The course is designed to develop the oral presentation and critical thinking skills required for research.

Prerequisites:

PATH 581

Course Director:

Gregory Dressler, Ph.D.

**REQUIRED each term for all MOLECULAR & CELLULAR PATHOLOGY Pre-Candidates;
RECOMMENDED for PIBS students interested in MCP**

Course Number	Course Title	Term	Number Credits	Meeting Time
Path 850	Current Topics in Pathology	FA/WI	1	TH;4:00-5:00

Course content:

This active seminar series that meets each week. This series explores a variety of topics and features faculty, graduate student and research fellow speakers from within the Pathology department, lecturers from other academic units within the medical school and University, and invited outside speakers. Enrollment in Path 850 is required each Fall and Winter term for all Pathology Pre-Candidates; Pathology Candidates are not required to enroll, however attendance is mandatory.

Prerequisites:

None

Course Director:

Thomas Wilson, M.D., Ph.D.

Molecular and Cellular Pathology
Laura Hessler
763-6454

RECOMMENDED for MOLECULAR & CELLULAR PATH students (Most MCP students take during 2nd year)

Course Number	Course Title	Term	Number Credits	Meeting Time
Path 643	Immunopathological Mechanisms of Disease	FA	1	T,TH; 3-4:20 PM (4 weeks)

Course content:

This course focuses on major immunopathologic diseases including autoimmunity, virology, parasitology, and allergy/asthma. Students are given an overview of the subject to be covered on the first lecture of the disease series and the following two lectures are covered using recent publications and student discussions. Special emphasis is given to experimental approaches, methodology, and critical review of the literature.

Prerequisites:

None

Course Director:

Nicholas Lukacs, Ph.D.

Molecular and Cellular Pathology
Laura Hessler
763-6454

RECOMMENDED for MOLECULAR & CELLULAR PATHOLOGY students

Course Number	Course Title	Term	Number Credits	Meeting Time
Path 553	Cancer Biology	FA	3	T,TH;10-11:30 AM

Course content:

The Cancer Biology course provides students with a broad overview of the process of cancer progression, and culminates with several lectures that integrate our understanding of cancer biology with current and future approaches to cancer prevention and therapy. The course covers the process of neoplastic progression, the molecular biology of oncogenes, and tumor suppressor genes, as well as the molecular mechanisms of apoptosis and DNA repair. This team-taught course provides students with cutting edge information from experts in the various disciplines of cancer research.

Prerequisites:

BIOCHM, GENET

Course Director:

Michael Imperiale, Ph.D.

Molecular and Cellular Pathology
Laura Hessler
763-6454

RECOMMENDED for MOLECULAR & CELLULAR PATHOLOGY students

Course Number	Course Title	Term	Number Credits	Meeting Time
Pharm 502	Intro to Scientific Communications	WI	2	W;1:00-3:00 PM

Course content:

The purpose of this course is to introduce graduate students to essential scientific communication skills. Beginning with the relatively easy task of learning to search the literature over the Internet and ending with the challenges of writing a NRSA grant application and giving a short seminar, each student will develop confidence in both written and spoken communication. Class meetings will alternate between presentations by local experts on various topics and student presentations of their work in progress. In depth analysis of student writing and presentation skills will be provided in class by the instructor, by other students working in small groups, as well as by guest scientists. Through a series of assignments, each student will write a grant over the course of the semester on a topic of his or her choice. By the end of the term each student will have polished and revised the proposal to a high quality product, which will be presented both orally and in written form to the rest of the class. Finally, each student will participate in a mock study section to constructively evaluate each other's grants.

Prerequisites:

Graduate level courses in Biochemistry; permission of instructor.

Course Director:

Lori Isom, Ph.D.

Molecular and Cellular Pathology
Laura Hessler
763-6454

RECOMMENDED for MOLECULAR & CELLULAR PATHOLOGY students

Course Number	Course Title	Term	Number Credits	Meeting Time
Path 551	Proteomics and Informatics	WI	3	T,TH;1:00-2:30 PM

Course content:

This is a lecture course on proteomics and its biomedical applications. Proteomics – the study of the totality of the protein complement of an individual organism – is a very timely topic, both in basic science and in biomedical research and applications. This course begins with a thorough study of proteomics technology based on mass spectrometry (MS) technology, but will also touch upon alternative approaches. Informatics based methods of study are extremely important in this area and will be discussed in detail. Topics include: Introduction to proteomics and mass spectrometry, peptide and protein identification, statistical methods and computational algorithms, post-translational modifications, genome annotation and alternative splicing, quantitative proteomics and differential protein expression analysis, protein-protein interaction networks and protein complexes, data mining and analysis of large-scale data sets, proteomics in cancer research, clinical applications, related technologies such as metabolomics and protein arrays, data integration and systems biology.

Prerequisites:

The course is fundamentally interdisciplinary. Undergraduate Biochemistry and Calculus, or permission of instructor.

Course Director:

Alexey Nesvizhskii, Ph.D.