

# INTERDEPARTMENTAL STDS (IDL) (IDL)

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## **IDL 560 Cancer Biology 3 cr**

This course provides a comprehensive coverage of molecular and cellular aspects of carcinogenesis as well as clinical issues related to human cancer. This course will specifically cover areas of histology, pathology, epidemiology, genetics, viruses, oncogenes and tumor suppressor genes. Additionally, topics to be covered include cellular and molecular basis of chemotherapy, pharmacology of anticancer drugs, molecular and cellular basis of radiotherapy, and biological therapy of cancer and clinical trial design.

## **IDL 566 Topics in Cancer Biology 1 cr**

Students and faculty participate in a supervised reading of current literature and meet once a week to interact in a discussion of the selected article. The goal of this course is to maintain the student's level of information at a "state of the art" in both methods and theory in the discipline and to develop critical skills in reviewing the literature.

## **IDL 567 Dir Studies in Cancer Biology 1-6 cr**

Students participate in research under the direction of a graduate faculty member. The student may pursue independent research or participate in a literature project.

## **IDL 570 Medical Pathology 7 cr**

The course is taught as an introduction to the study of the diseases of man by developing working definitions and classifications of disease on the basis of known causes and effects. After surveying the structural changes characterizing disease, the mechanisms involved in clinical and lab manifestations are analyzed for human diseases.

## **IDL 571 Mouse Models Biomed Research 3 cr**

This course utilizes the primary scientific literature to provide students with in-depth knowledge regarding the development and utilization of mouse models in biomedical research. Students are required to actively participate in class discussions, present scientific papers, and develop a research project that utilizes mouse models.

## **IDL 576 Interdisciplinary Lit Reports 1 cr**

Students and faculty participate in a supervised reading of the current literature and meet periodically (usually once a week) to interact in a discussion of the selected article or topic. The goal of this course is to maintain the faculty's and students' level of information at a "state of the art" in both methods and theory in the discipline and to develop critical skills in reviewing the literature.

## **IDL 577 Intro to Research Methods 3 cr**

Theoretical and practical training in basic skills utilized in basic medical science research laboratories, for students entering the first year interdisciplinary curriculum. Discussion of regulatory issues in biomedical research will be interwoven with hands-on laboratory exercises. Offered concurrently with IDL 580.

## **IDL 580 Fund Basic Medical Sciences I 8 cr**

First of a two-semester sequence designed for students in the first year interdisciplinary curriculum. In-depth exploration of the fundamentals of biochemistry, cell biology, and molecular biology prerequisite to advanced study of basic medical sciences. Didactic lectures will be complemented with discussions of the literature.

## **IDL 581 Fund Basic Medical Sciences II 8 cr**

Second of a two-semester sequence designed for students in the first year interdisciplinary curriculum. Detailed exploration of the fundamentals of microbiology and immunology, developmental biology, integrative systems physiology, and mechanisms of drug action prerequisite to advanced study of basic medical sciences. Didactic lectures will be complemented with discussions of the literature.

**Prerequisite:** IDL 580 Minimum Grade of C

## **IDL 590 Sp Top - 1-3 cr**

In-depth tutorial exposure to interdisciplinary topics in Basic Medical Sciences.

## **IDL 593 IDL Dir Study Co-Op/Internship 6 cr**

Directed research study under the direction of a member of the graduate faculty.

## **IDL 594 Interdisciplinary Dir Studies 1-6 cr**

Directed research study under the direction of a member of the graduate faculty. This course should be taken by students who have not yet identified a major professor in Basic Medical Sciences.

## **IDL 595 Distinguished Scientist Sem 0 cr**

A seminar course in which outside speakers are brought in to discuss their research. Students will attend the seminar and have an opportunity to meet informally with the speaker. Attendance will be required, and the material will be testable during each student's qualifying exam.

## **IDL 620 Biomedical Engineering I 4 cr**

Fundamental concepts of medical instrumentation, biomedical imaging and biological systems modeling as used in biomedical engineering. Course is cross-listed with EG 620.

**Cross-Listed:** EG 620

## **IDL 621 Biomedical Engineering II 4 cr**

Fundamental concepts of transport phenomena, cellular and tissue mechanics, and materials as used in biomedical engineering. Course is cross-listed with EG 621.

**Cross-Listed:** EG 621

## **IDL 630 Lung Biology 4 cr**

This course introduces an advanced level of lung physiology. An understanding of fundamental lung development, anatomy, and cell and organ physiology is emphasized. The course consists of lectures and written assignments and essay exams. Reading assignments are from the primary literature.

**Prerequisite:** IDL 580 Minimum Grade of C and IDL 581 Minimum Grade of C

## **IDL 631 Lung Pathobiology 4 cr**

This course builds on an in-depth understanding of normal lung biochemistry, cell biology, pharmacology, and physiology to examine lung disease. Emphasis is given on understanding mechanism(s) underlying the genetic, cell biology, anatomy and physiology of disease development and progression. Current therapeutic interventions are discussed. Clinical correlations are utilized to track signs and symptoms of specified diseases, and provide a framework for treatment options. The course consists of lectures and written assignments and essay exams. Reading assignments are exclusively from the primary literature.

**Prerequisite:** IDL 630 Minimum Grade of C

**IDL 635 Advanced Signal Transduction 4 cr**

This course builds on signal transduction topics discussed in the Fundamentals course (IDL 580, 581). The mechanisms of more generalized signaling pathways (e.g., G-protein couples pathways) to specific signaling pathways (e.g., TGF/BMP family) will be discussed. Signal transduction pathways will be examined using classic literature references, from the molecular details of pathway components to the effects on the organ-system. The course consists of lectures, student presentations, and essay/problem solving examinations.

**Prerequisite:** IDL 580 Minimum Grade of C and IDL 581 Minimum Grade of C

**IDL 640 Stat Exp Design in Biomed Res 2 cr**

This course covers statistical analysis, logic and hypothesis-driven experimental design in biomedical research, utilizing a combination of lectures, weekly practical data sets or written assignments, and student presentation.

**IDL 641 Effective Scientific Writing 1 cr**

This course provides strategies to improve communication skills via construction of logical scientific arguments and effective writing. Course format will include lecture/discussion, in class practical exercises, and writing assignments. In addition, participants will be introduced to the Turnitin software, reference databases, and other electronic resources useful in preparation of proposals and manuscripts.

**Prerequisite:** IDL 580 Minimum Grade of C and IDL 581 Minimum Grade of C

**IDL 645 Res Prog Smth Musc/Vasc Blgy 1 cr**

Students meet on alternate weeks for 2 hr with faculty and other research professionals to discuss on-going research projects in the field of smooth muscle and vascular biology. Signal transduction pathways, pathophysiological mechanisms in vascular disorders associated with smooth muscle, and other topics of interest will be discussed. Emphasis will be on up-to-date research results from laboratories as well as newly published literature findings. Students will be expected to present the results of their own laboratory research at least once a year to the group.

**IDL 650 Topics in Lung Biology 1 cr**

In-depth exposure to selected topics in lung biology or pathobiology. Course may be repeated for credit when course content varies.

**Prerequisite:** IDL 630 Minimum Grade of B and IDL 631 Minimum Grade of B

**IDL 656 Research Sem Lung Biology 1 cr**

Students and faculty present a research topic for discussion before members of the Center for Lung Biology. The presentations are usually scheduled on a rotational basis. The student may present research data for critique by the faculty.

**IDL 667 Cancer Biology Research Sem 1 cr**

Students and faculty present a research topic for discussion before members of the department. The presentations are usually scheduled on a rotational basis. The student may present research data for critique by the faculty.

**IDL 676 Literature Report Lung Biology 1 cr**

Students and faculty participate in a supervised reading of the current literature and meet once a week to discuss the selected article or topic and its relation to ongoing research. The goal of this course is to maintain the faculty's and students' level of information at a "state of the art" in both methods and theory in the discipline and to develop critical skills in reviewing the literature of lung biology.

**IDL 780 Applications Biomed Statistics 3 cr**

The course treats the conception, construction, criticism, and deployment of statistical models of biomedical data. Models of dose-response, identification, and survival are developed and applied to lab, clinical and epidemiological data. Course covers linear, generalized linear, and non-linear models of continuous, discrete, and censored data, and includes topics in experimental design, regression diagnostics, salvage of weak parameter estimates, and meta-analysis. Course is organized, for the greater part, on a case-study format.

**IDL 799 Research-Dissertation 1-6 cr**

Independent research by the student under the sponsorship of the graduate faculty in individual departments in the Basic Medical Sciences. Prerequisite: Approved formal research proposal