
IBS **Integrated Biomedical Sciences**

IBS 601 BIOMOLECULES AND METABOLISM. (3)

An introductory graduate-level biochemistry course designed to provide a basic knowledge of molecular and biochemical principles necessary for advanced graduate study. Protein structure and function, enzyme catalysis, the generation and storage of metabolic energy, amino acid, nucleotide, and lipid metabolism and biological membranes and transport will be covered. Prereq: CHE 105, 107, 230 and 232; BIO 150 and 152; or equivalents. (Same as BCH 607.)

IBS 602 MOLECULAR BIOLOGY AND GENETICS. (3)

In introductory graduate-level course focused on molecular biology and genetics (concepts and techniques) necessary for advanced graduate courses. The course will emphasize basic genetic principles and the molecular mechanisms that underlie the regulated expression of genes, including transcription, mRNA processing and translation, as well as mechanisms of DNA replication/repair and recombination. Genetic engineering and other experimental approaches that are critical to molecular biology research will be covered. Prereq: CHE 105, 107, 230 and 232; BIO 150 and 152; or equivalents.

IBS 603 CELL BIOLOGY AND SIGNALING. (3)

An introduction to cell biology and signaling focused on cell types and architecture, membrane structure, cytoskeleton, mitochondria, cellular mechanisms of development, cell division, cell cycle, apoptosis, necrosis and cancer. Emphasis will also be placed upon the signaling pathways controlling these processes. Prereq: CHE 105, 107, 230 and 232; BIO 150 and 152; or equivalents.

IBS 606 PHYSIOLOGICAL COMMUNICATION. (3)

This course will consider the function of the mammalian organism from a perspective ranging from cells to organs, with an emphasis on physiological communication between organ systems. It will build upon the Integrated Biomedical Sciences (IBS) series of courses to allow the student to develop a truly integrative appreciation of biologic function. Prereq: IBS 601 and IBS 602.

IBS 607 SEMINAR IN INTEGRATED BIOMEDICAL SCIENCES. (0)

Weekly seminar devoted to the presentation and discussion of classic and new research. May be repeated to a maximum of four times; two semesters are required as part of the IBS curriculum. Prereq: Admission to IBS curriculum.

IBS 608 SPECIAL TOPICS IN INTEGRATED BIOMEDICAL SCIENCES. (2)

IBS 608 is comprised of a series of 1/2 credit minicourses, each meeting for 1 hour/week for 7 weeks, that will be taught during the Spring semester. Each minicourse will focus on a specific topic or area of research that is ongoing at UK or is particularly timely/exciting. Each student is required to participate in 4 of these minicourses for a total of 2 credit hours during the semester. Up to ten minicourses will be offered each semester. The particular topics (and participating faculty) may vary from year to year. Students will be expected to sign up for 6 courses in order of preference and will be assigned to 4 minicourses. Prereq: Students enrolled in IBS and have taken IBS601 and IBS602 can participate in this course. Non-IBS students can participate with permission of the Course Director. A strong background in molecular biology, biochemistry and chemistry (including organic chemistry) is highly recommended.

IBS 609 RESEARCH IN INTEGRATED BIOMEDICAL SCIENCES. (3)

Individualized laboratory and research experience under the supervision of a faculty member. May be repeated to a maximum of six credit hours. Two semesters required as part of IBS curriculum. Prereq: Admission to IBS curriculum and consent of instructor.

IBS 610 CRITICAL SCIENTIFIC READINGS. (2)

The major emphasis of this course is to develop within students the ability to critically read, evaluate and critique papers in the areas of biochemistry, molecular biology, and genetics. Students will meet weekly for two hours in a small group setting to discuss papers, with all groups reading the same set of papers. Each group of students (5-6/group) will meet weekly with one faculty member during the course of the semester. Grading will be based on attendance, participation, mock manuscript reviews, and student-led classes. Prereq: Students are required to have taken IBS 601 and IBS 602 or to take IBS 601 and IBS 602 concurrently with this course.

IBS 611 PRACTICAL STATISTICS.

(2)

Practical Statistics will introduce students to basic statistical concepts and applications that are used in a majority of biomedical and translational research studies. The emphasis will be on “how” and “why” certain basic statistical applications are used rather than the theory behind various statistical methods. Students will cover materials using didactic lectures, examples of data from the primary literature, and homework problems. Prereq: Some background in molecular biology, cell biology, biochemistry, and/or chemistry (including organic chemistry) at the graduate level is recommended. Courses such as BCH 401G, IBS 601, IBS 602, or IBS 603 would satisfy this recommendation.