MBS-Multidisciplinary Biomedical Science

MBS 601. Molecular and Cell Biology. 4 Hours.
This course will provide a broad but rigorous overview of molecular biology. Cell structure between prokaryotes and eukaryotes will be compared and contrasted. DNA structure/organization will be discussed with respect to replication and repair mechanisms. Mendelian, non-Mendelian and chromosomal bases of genetics will also be discussed. Transcription and translation will be discussed in detail, along with their respective regulatory mechanisms. Throughout this course there will be a focus on intracellular organelles that contribute to the generation and regulation of DNA, RNA and protein. Finally, when possible, relevance to human disease will be presented and discussed.

MBS 602. Biochemistry and Cell Biology. 4 Hours.
This course will cover the structure, function and metabolism of biological macromolecules including proteins, carbohydrates, lipids and nucleotides. A rigorous overview of pathways will be discussed that are important for the effective metabolism of macromolecules (e.g. glycolysis, citric acid cycle) and generation of energy for cells. The last part of this course will discuss membrane structure and function, and will provide an overview of eukaryotic cell signaling.

MBS 603. General Human Physiology. 4 Hours.
This course begins with the study of basic cell function, then proceeds to a rigorous overview of specific human organ systems.

MBS 695. Professional Development Colloquium for Non-Thesis Students. 1 Hour.
This course will provide a rigorous overview of scientific reading, writing, and presenting skills, with a focus on career development. Students will work in teams to read, present and critique journal club articles; prepare and review resumes, individualized development plans (IDPs) and personal statements, followed by submission of re-writes; and learn effective interview skills via mock interview format.

MBS 696. Special Topics. 1-3 Hour.
To be determined by the Program Director and prospective Course Directors.

MBS 697. Colloquium for MBS Plan I Thesis Students. 1-2 Hour.
This required colloquium course will be taught using a journal club format. Students will be taught to critically review scientific literature, while gaining effective written and oral scientific communication skills. Students working in small groups will be responsible for choosing a current biomedical research article and sharing their review of this article in a Power Point (PPT) presentation. Student audience members will be responsible for asking questions during the presentation and for submitting a review of each article in abstract form. The Course Director will provide initial instruction in the critical review, presentation and written summary of scientific literature. Topics to be covered include: critical review (background and rationale for study; identification of hypothesis; description of methods used; presentation of results and their interpretation; indicate significance of study and describe next step experiments), effective communication of research articles via Power Point presentations; and writing assignments based on articles discussed in class. When possible, scientific integrity in research will be a focus of in-class discussions.

MBS 698. Non-Thesis Research. 0-6 Hours.
Students may perform independent study in a research laboratory setting. This work may contribute toward concentration credits subject to Program Director approval.

MBS 699. Thesis Research. 1-6 Hour.
Supervised independent research.
Prerequisites: GAC M