MBS - BIOMEDICAL SCIENCES

MBS 636 Applied Biostatistics (3 Credit Hours)
This course introduces the summarization, analysis, interpretation, and presentation of research data. Topics include sampling, experimentation, numerical and graphical descriptive statistics, confidence intervals, and hypotheses testing. Inferential hypothesis tests introduced include correlation, analysis of 2-way tables, t-tests, ANOVA, and simple linear regression. At the end of the course, students should be able to use and evaluate the more commonly used statistical tests in relevant research publications and communicate clearly about statistical results within research teams.
Academic Level: Graduate

MBS 640 Medical Ethics (3 Credit Hours)
This course explores the range of ethical issues facing healthcare administrators, providers, and biomedical researchers. Students will gain expertise analyzing ethical dimensions of biomedical science and healthcare from administrative, clinical, and organizational perspectives. Current issues, as well as perennial conflicts in healthcare law and ethics, will provide real-world case studies for students to research and produce original analysis. Throughout the course, students will gain experience applying diverse ethical frameworks to biomedical moral dilemmas. Emphasis will be placed on critical thinking and moral reasoning in a biomedical context.
Academic Level: Graduate

MBS 650 Applied Medical Biochemistry (4 Credit Hours)
This comprehensive lecture-based clinical biochemistry course explores the intricacies of human biochemistry with a primary focus on its medical relevance. Through a detailed analysis of core biochemistry concepts, students will gain a deep understanding of how these principles intersect with human health and disease. Emphasizing practical applications, the course equips students with the ability to critically analyze and assess prevalent biochemistry concepts as encountered in primary literature. By fostering this analytical skill set, students are empowered to engage in continuous learning within the realms of biochemistry and the broader health sciences.
Academic Level: Graduate

MBS 656 Applied Microbiology (3 Credit Hours)
This course provides an in-depth exploration of microbiological principles as they apply to medicine, focusing on the role of microorganisms in human health and disease. Students will examine the biology, classification, and identification of bacteria, viruses, fungi, and parasites, along with their mechanisms of pathogenicity and host interactions. Emphasis is placed on the clinical significance of microorganisms, including their role in infectious diseases, antimicrobial resistance, and immunology, and the function of microbes in maintaining health. Key topics include sterilization and infection control, diagnostic microbiology techniques, epidemiology of infectious diseases, and the use of antibiotics and vaccines. The course will reinforce theoretical concepts in culturing, identifying, and testing microorganisms relevant to clinical settings. By the end of the course, students will gain a solid understanding of how microorganisms impact patient care and understand the application of microbiological techniques to diagnose and manage infections in a healthcare environment.
Academic Level: Graduate

MBS 660 Gross Anatomy (4 Credit Hours)
This graduate-level course in advanced gross anatomy offers an intensive study of the structure and organization of the human body at a macroscopic level. Through a combination of lectures, media, and interactive digital simulations, students will explore the anatomical intricacies of the human body with a focus on regional and systems-based approaches. Building upon foundational knowledge acquired at the undergraduate level, this course will delve into the detailed anatomy of the musculoskeletal, nervous, cardiovascular, respiratory, gastrointestinal, and urogenital systems. Emphasis will be placed on the functional significance of anatomical structures and their clinical correlations.
Academic Level: Graduate

MBS 670 Medical Physiology (4 Credit Hours)
This course offers a thorough examination of human physiology, with an emphasis on medical physiology. Both molecular and cellular mechanisms will be studied, as will the interaction of organs and body systems. In addition to examining normal physiological functions, the disruption of homeostasis in disease states and the body's compensatory responses will also be covered. An array of teaching and learning methods will be used throughout the course, including reading assignments, online activities and assignments, discussions, quizzes, and exams. By evaluating and discussing clinical case studies, students will apply physiological concepts to real-life conditions. Upon completion of the course, students will have a solid understanding of medical physiology which will provide them with a strong foundation for a future career in health care or related fields.
Academic Level: Graduate

MBS 675 Applied Genomics (3 Credit Hours)
Genomics is a powerful tool that's actively shaping the future of healthcare. This course is designed to provide preclinical students with a comprehensive understanding of the applications of genomics in medicine. The course covers fundamental principles of genomics, current technologies, and their clinical applications. Students will engage in clinical case studies and explore emerging issues in genetics and genomics relevant to practicing health professionals today, including primary care and general medicine, cardiology, oncology, rare disease, and other clinical applications.
Academic Level: Graduate

MBS 680 Advanced Cell Biology (3 Credit Hours)
This course provides a comprehensive understanding of cellular structure, function, and regulation within the context of human health and disease. Through a series of lectures, seminars, and interactive discussions, students will explore the fundamental principles of cell biology and their clinical relevance in various medical specialties. This course will cover advanced topics in cell biology, with a focus on their implications for understanding disease mechanisms, diagnostic approaches, and therapeutic strategies. Throughout the course, students will engage in case-based discussions, critical analysis of clinical studies, and presentations to deepen their understanding of advanced cell biology concepts and their applications in medical practice. Emphasis will be placed on the integration of basic science knowledge with clinical reasoning and decision-making. By the end of the course, medical students will have gained advanced knowledge and skills in cell biology theory and its clinical applications, preparing them for careers in medical practice, biomedical research, and academic medicine.
Academic Level: Graduate
Enrollment is limited to students with a major in Master of Biomedical Sciences.

MBS 750 Biomedical Science in Practice (3 Credit Hours)
This course offers an opportunity for students to integrate and apply advanced concepts in biomedical science through a comprehensive project. Over the duration of the course, students will select a topic of significance within the biomedical or healthcare field, conduct research, and synthesize their findings into a well-rounded, evidence-based written report. The project will culminate in a professional-quality presentation, showcasing the students' ability to communicate complex scientific concepts effectively. By focusing on the real-world application of biomedical science principles, students will gain valuable experience in scientific writing, data analysis, and presenting to both academic and professional audiences.
Academic Level: Graduate
Enrollment is limited to students with a major in Master of Biomedical Sciences.

Enrollment is limited to Graduate level students.