MASTER OF SCIENCE IN BIOMEDICAL SCIENCES (MBS)

MBS 1B02. Introduction to Research. (1 Credit Hour)
This course provides MSBS students with an overview of research opportunities at Des Moines University. Students participate in laboratory rotations that build foundational research skills and help them identify a suitable research mentor.

MBS 1B03. Responsible Conduct Biomedical Research. (1 Credit Hour)
This course provides an in-depth review of the core RCR topics including authorship, collaborative research, conflicts of interest, human subjects, and research misconduct. Case studies and discussions are used to supplement key concepts. All major sponsoring organizations require certain categories of researchers to receive RCR training. RCR is increasingly viewed as an essential component of training, regardless of the individual's training program.

MBS 1B05. Special Topics in Physiology & Pharm. (1 Credit Hour)
This course will introduce specific topics in physiology with focus on associated disease processes and relevant pharmacological treatments. Students will continue their studies in advanced concepts of physiology, including pathophysiology, as well as basic principles of five specialized areas of pharmacology (autonomic and cardiovascular, respiratory, renal, endocrine, and neuropharmacology).
Prerequisite: *Consent of Instructor*

MBS 1B06. Intro to Biostatistics and Data Analysis. (2 Credit Hours)
This is an introductory course that exposes the student to the use of statistical techniques for research data analysis. Topics covered include research design, data acquisition, types of data, univariate and bivariate data summarization techniques, tabular and graphical data presentation, inferential techniques using different theoretical distributions and the use of multivariate statistical techniques.

MBS 1B07. Microbiology and Immunology. (5.5 Credit Hours)
The course offers an introduction to basic principles and clinical relevance of immune mechanisms and fundamentals of host-pathogen interactions. Exercises that link course content to research laboratory applications are provided throughout the course.

MBS 1B08. Major Organ Physiology. (3 Credit Hours)
The course introduces basic principles of medical physiology from the cellular level to the organ systems. Emphasis is placed on regulatory control mechanisms that are necessary to understand body homeostasis and pathophysiology.

MBS 1B11. Special Topics Microbiology & Immunology. (1.5 Credit Hours)
The course is designed to provide students with information on one or more major topics in microbiology and immunology (e.g., microbial pathogenesis, host response, metabolism, replication). During this course the faculty will be able to guide students through the scientific process using a relevant body of literature. Through didactic instruction, faculty-guided review followed by student-led discussion and/or written reports, students will be able to critically analyze primary literature and present salient points of the papers. Concurrent enrollment/satisfactory completion of MICR 1103 Microbiology and Immunology or course director consent is a prerequisite for this course.

MBS 1B12. Frontiers in Biomedical Research. (2.5 Credit Hours)
The course is designed to provide students with a foundational understanding of modern biomedical research with an emphasis on critical thinking, research design and application of techniques. Students are expected to gain exposure to fundamental lab techniques as well as recent breakthroughs in biomedical research through presentations by content experts, primary literature, and problem-based practice. The primary content areas covered will include: general laboratory techniques, cutting-edge technologies, and their applications to genetics, molecular biology, cell structure & function. The course will serve as an important foundation in the biomedical sciences that will support students' thesis projects in their chosen field.

MBS 1B12A. Frontiers in Biomedical Research A. (1.5 Credit Hours)
The Frontiers in Biomedical Research course consists of two parts (A and B). Frontier A is offered in the fall term. The course is designed as an MSBS core course to provide students with information on modern biomedical research with an emphasis on research process and techniques. The course format includes lectures, small group discussions, and short oral presentations.

MBS 1B12B. Frontiers in Biomedical Research B. (1 Credit Hour)
Frontiers B is offered in the spring semester. The course is designed as an MSBS core course to provide students with information on modern biomedical research with an emphasis on research process and techniques. The course format includes lectures, small group discussions, and short oral presentations. Prerequisite: MBS 1B12A, MBS 1B12A
Prerequisites: *undefined MBS 1B12A, MBS 1B12A*

MBS 1B14. Research Compliance & Laboratory Safety. (0.5 Credit Hours)
This course provides students with laboratory safety and regulatory compliance procedures and policies. Students will review on-line training modules and participate in laboratory demonstrations.

MBS 1B20. Introduction to Anatomy. (6 Credit Hours)
The introduction to anatomy course provides an in-depth study of the human body using lecture and online laboratory dissection. Additional emphasis is placed on developmental anatomy and normal radiographic anatomy. This course will include the anatomical relationships of the back, thorax, abdomen, pelvis, perineum (reproductive system) and the limbs.

MBS 2B04. Presentation of Scientific Information. (1 Credit Hour)
The course is designed to provide students with a basic understanding of the components necessary to prepare and deliver an effective oral scientific presentation. Through didactic instruction, individualized mentoring, and practical experience, students will be provided insight and the tools necessary to improve their presentation skills. This is a required course for students enrolled in the Biomedical Sciences Program in the College of Osteopathic Medicine.

MBS 2B05. Scientific Communications. (1.5 Credit Hours)
Students will improve oral and written communications skills in biomedical research. They will learn fundamentals of scientific writing and publishing by developing a scientific manuscript based on their research results. The manuscript will be reviewed by faculty and peers, revised by the student, and incorporated into the Journal of Biomedical Student Research, which is disseminated to MSBS students and faculty. In addition, students will present their project to the public as an oral presentation during the University-wide research seminar series.

MBS 2B10. Research. (1-7 Credit Hours)
The course is designed to provide students with a scientific research experience. Students are expected to undertake the activities agreed upon with their thesis advisor, which may include: learning, using, and documenting the methodologies of research and scientific method, development and statement of hypotheses being tested, interpretation of results, and communication of the results and their implications.

MBS 2B12. Thesis. (1-5 Credit Hours)
This multi-term course provides a framework for thesis-track MSBS students to establish a thesis advisory committee, prepare and present a formal thesis proposal, and write and publicly defend a thesis; this thesis represents the culmination of the student's research and knowledge developed over their course of study. Professional development is also provided in the form of a mock interview.