

# MEDICAL SCIENCES - M.S.

Program Director: Kenneth L. Kramer, PhD  
Program Office: Criss II, Rm 315

## Graduate Study in Medical Sciences

The Master's program in Medical Sciences is offered by the Department of Biomedical Sciences in collaboration with the Departments of Medical Education and Medical Humanities. The program offers two tracks: our historically-successful Clinical Anatomy and new Biomedical Sciences.

All students must begin the program in August with a Foundations of Medicine course taken with the first-year medical students. This 5-week course is followed by an integrated study of human organ systems that includes gross anatomy, physiology, histology, and embryology as related to clinical practice. Students have opportunities to dissect the entire body and engage in the analysis of medical cases. During late November and early December, time is dedicated to board prep or service learning, depending on the individual student needs.

In the spring, students will work in small groups to examine ethical and humanitarian problems as well as attend autopsies and surgeries. Students will also identify a faculty mentor to determine a track of study and begin work on their Capstone Project, an interdisciplinary project based on their coursework which will address a specific challenge to medicine. Students will choose a course of study between our anatomy educator and biomedical sciences tracks that differ in the coursework during the spring.

The program lasts 11 months, concluding in June after the first Summer Session when students present their Capstone Projects to their faculty and peers. Successful students will graduate with a master's degree in Medical Sciences in August.

## Program Goals

Graduates with a master's degree in Medical Sciences will:

- describe the structure and function of the human body at the whole body, system, organ, and cellular levels.
- assess the signs and symptoms of pertinent human illnesses and relate them to the pathophysiology of disease.
- develop and employ an ethical framework for evaluating issues in biology and medicine.
- nurture professional development through a wide variety of interactions with medical and allied health professional as well as time dedicated to board prep or service.
- develop and demonstrate a habit of cognitive and affective reflection that enhances self-awareness.
- address personal learning gaps through critical, self-directed evaluation of scientific literature.
- explore, reflect and choose a professional path that matches an area of their passion and abilities.

All graduate students in the program will be guaranteed an interview at Creighton University Medical School in March for possible admission in the subsequent fall. Additionally, top graduates of the MS in Medical Sciences program will be eligible to earn scholarships for attending Creighton University School of Medicine.

## Admissions Requirements

This course of study is primarily designed for students who wish to continue to pursue a professional degree in medicine, dentistry, or another health care profession. Graduates will also be prepared for careers in clinical anatomy education or biomedical science research.

Applicants must be a citizen or permanent resident of the U.S., must have earned at least a B.S. or B.A. with a strong science component, and must have attained at least a 3.0 grade point average. For graduates with a degree from a non-biology or non-chemistry program, coursework requires an advanced biology course (e.g. a 300-level cell/molecular/developmental biology) and statistics.

Students are required to take the Graduate Record Exam (GRE) or an equivalent professional school entrance exam (e.g. MCAT, DAT) less than two years prior to the application deadline. While there is no minimum score requirement, MCAT of 500, GRE of 50%, or DAT of 50% is preferred.

Applicants must submit three letters of recommendation; two of three letters must be from an assistant, associate, or full professor.

Students are required to complete a personal statement essay in which the applicant reflects on their motivation for admission to this program. In addition, students may wish to comment on significant fluctuations in their academic record that are not explained elsewhere in your application and/or include information such as unique hardships, challenges, or obstacles that may have influenced their educational pursuits.

Applicants must have the ability to meet the Creighton University School of Medicine's technical standards ([medschool.creighton.edu/future-students/md-program/application-process](https://medschool.creighton.edu/future-students/md-program/application-process) (<https://medschool.creighton.edu/future-students/md-program/application-process/>)).

**We review applications starting April 1st, interview outstanding applicants soon thereafter, and promptly send out decisions. All applications must be complete by June 15th. Applicants accepted to the program on or before April 15th must enroll by June 15th.** Because our class is filled on a rolling basis, we strongly encourage prospective students to complete their applications and enroll as soon as possible. We know many students on medical school waiting lists wish to delay their application and enrollment for as long as possible. However, all unresolved applications are cancelled when the class fills. Only admitted applicants who enroll are ensured a seat in the program.

## Degree Programs in Medical Sciences

M.S., Medical Sciences (<http://catalog.creighton.edu/graduate/graduate-programs-courses/medical-sciences/medical-sciences-ms/>)

### Program Faculty

**Biomedical Sciences**  
Kenneth L. Kramer, PhD

### Medical Education

Tyler E. Dunn, MS  
Venkatesh Govindarajan, PhD  
Cassandra Hays, PhD  
Leah D. Hunter, PhD  
Carol S. Lomneth, PhD

### Medical Humanities

Kevin T. FitzGerald, SJ, PhD

Leslie Kuhnel, DBe, MSHCE, MPA  
Nicole M. Piemonte, PhD

## Pharmacy Sciences

Anthony E. Kincaid, PT, PhD

## Courses

### **MMS 600. Foundations of Medicine. 4 credits.**

This five-week immersive course is taken with the first-year medical students and introduces the basics of medical cell and molecular biology. The course will use lecture, case discussion, and problem-based learning discussion to expose students to common pathologies and various specialty topics in preparation for the systems block.

### **MMS 601. Human Physiology. 2 credits.**

This course examines basic concepts of cellular physiology and organ system physiology of the nervous, endocrine, muscle, cardiovascular, respiratory, gastrointestinal, and renal systems, as well as multisystem integration. P. Graduate standing or Instructor Consent.

### **MMS 602. Human Gross Anatomy. 5 credits.**

Graduate students in the MS in Medical Sciences program have the opportunity to learn the detailed structure of the human body. Through integration of cadaveric dissection, a holographic atlas, and team-based learning, students will develop a thorough understanding of the 3D relationships necessary for a medical professional. Prereq: Instructor Consent.

### **MMS 603. Microscopic Anatomy. 3 credits.**

This course is for graduate students in the MS in Medical Sciences program interested in the structure and function of human cells, tissues and organs at the microscopic level. The goal of the course is for students to develop an understanding of the architecture of human cells, tissues, and organs and to relate microscopic structure to the function, or disfunction, of the human organism. P. Instructor Consent.

### **MMS 604. Clinical Embryology. 2 credits.**

This is a course in human embryology designed to provide students with insight into the important correlation between human embryology and clinical problems associated with pregnancy and birth defects. The course will cover development of all of the systems of the body. The fetus, placentation, birth and delivery will also be covered. Major congenital malformations will be discussed in detail. P. Instructor Consent.

### **MMS 620. Medical Ethics and Humanities. 2 credits.**

Through multiple small-group discussions, this course aims to prepare health professionals to provide respectful, humane patient care and to address current ethical problems in health care.

### **MMS 630. Human Head and Neck Anatomy. 2 credits.**

This course is for Master's in Medical Sciences students and is held concurrent with a course on human neuroanatomy. Using a dissection- and clinical-based approach, students will study the structure and anatomical systems of the head and neck.

### **MMS 635. Directed Independent Research. 4 credits.**

This course presents students with an opportunity to conduct original investigation under supervision and guidance of individual faculty mentor. P. Approval of the Course Director. CO: BMS 706; IDC 627.

### **MMS 640. Clinical Rotations. 2 credits.**

This course provides opportunities to experience day to day applications of gross anatomy in the clinical specialties of surgery, radiology, and pathology. Weekly discussions of the various cases will be held during which the pertinent anatomical correlations will be analyzed as will methods of best conveying to health sciences students the clinical information gained. Students will be expected to write a synopsis of each case and conduct the necessary literature research for a current relevant bibliography. P. IC.

### **MMS 645. Educational Techniques in Anatomy. 4 credits.**

Master's in Medical Sciences students will have the opportunity to design and implement educational techniques appropriate for lecture, small group, and laboratory applications. Each student will prepare and deliver formal lectures and assist in teaching anatomy in the lab.

### **MMS 651. Capstone Project. 3 credits.**

This course will present students with an opportunity to acquire foundational skills necessary for research in a medically-related discipline. After introduction to the scientific method and related topics, students will identify a mentor in the student's area of interest, develop a research proposal, and defend the research question and approach. Each student will then work with a Capstone Mentor to generate and present a poster summarizing their capstone project.