

# Medical Sciences

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## College of Medicine

### Admission Requirements

The Master's of Science in Medical Sciences (MSMS) is a broad interdisciplinary degree program housed in the College of Medicine. Participating Departments and Centers include Behavioral Sciences; Pharmacology and Nutritional Sciences; Toxicology and Cancer Biology; Microbiology, Immunology and Molecular Genetics; Molecular and Cellular Biochemistry; Neuroscience; and Physiology. The MSMS may be used as a stand-alone degree by students seeking career enhancement in fields such as basic biomedical research, the pharmaceutical industry, or the health science professions; by students seeking academic credentials in the biomedical sciences prior to applying for medical school or other health related professional degree programs; or by students seeking to enhance their knowledge base prior to choosing a career direction.

The MSMS degree may also provide supplemental or joint training for practitioners in the health professions (e.g., physicians, dentists, pharmacists), or students in professional health science programs based on individual career goals and research training needs. Finally, the MSMS program provides students with the opportunity to opt out of a Ph.D. program and receive a master's degree.

Admission to the graduate program is competitive and is based upon academic background, professional recommendations, performance on either the Graduate Record Examination (GRE), Medical College Admission Test (MCAT), or Dental Admission Test (DAT), and experience. Students should have completed an undergraduate degree in chemistry, biology, biochemistry, engineering, mathematics, neurosciences, physics, pharmacy or psychology. Although there are no formal course requirements, it is recommended that students have completed undergraduate courses in organic chemistry, calculus, physics, biochemistry (optional but likely helpful) and the biological sciences.

### Degree Requirements

The Medical Sciences program encompasses the disciplines of behavioral science; nutritional sciences; toxicology; microbiology, immunology and molecular genetics; molecular and biomedical pharmacology; molecular and cellular biochemistry; neuroscience and physiology. The student, in cooperation with the major professor/thesis advisor and the student's Advisory Committee, will determine the elective course work in the area of specialization and in related basic sciences.

Each student will take the required eight (8) hour core curriculum hours and will choose from the list of recommended courses and departmental course work to develop a disciplinary specialization. The degree requirements will vary with the thesis (Plan A) and the non-thesis (Plan B) option selected by the student. The thesis option requires a minimum of 30 hours (6 of which are research), and half of the 30 hours must be at the 600+ level, as well as an approved thesis based on the student's research. The non-thesis option requires a minimum of 30 graduate credit hours, half of which must be at the 600+ level.

Financial support is not provided for students in the M.S. in Medical Sciences program. Inquiries regarding the program should be directed to the Director of Graduate Studies, M.S. in Medical Sciences Program (Dr. Joe Springer at [jspring@uky.edu](mailto:jspring@uky.edu)) or Bridget Szczapinski at [bridget.szczapinski@uky.edu](mailto:bridget.szczapinski@uky.edu).

## Core Curriculum

The plan of study for the MSMS program consists of an eight (8) credit hour core curriculum and a

recommended course of study based on career tracks. The eight credit hour core curriculum consists of the following courses:

IBS 602	Molecular Biology and Genetics	(3)
IBS 606	Physiological Communications	(3)
TOX 600	Ethics in Scientific Research	(1)
MI 772	Seminar in Microbiology	(1)

### **Recommended Courses (representative list):**

ANA 417G	Functional Human Neuroanatomy
ANA 611	Regional Human Anatomy
ANA/PGY 605	Neurobiology of CNS Injury and Repair
BCH 401G	Fundamentals of Biochemistry
BCH 419G	Molecular Basis of Human Disease
BSC 731	Methods and Technologies in Clinical and Translational Science
IBS 601/BCH 607	Biomolecules and Metabolism
IBS 603	Cell Biology and Signaling
MI 494G	Immunobiology
MI 598	Clinical Microbiology
MI 685	Immunology, Infection, and Inflammation
NS 601/2/3	Integrated Nutritional Sciences I/II/III
NS 605	Wellness and Sports Nutrition
PGY 412G	Principles of Human Physiology
PHA 621	Principles of Drug Action
PHA 622	Molecular Drug Targets and Therapeutics
TOX 663	Drug Metabolism and Disposition
TOX 680	Molecular Mechanisms in Toxicology

Coursework: The minimum requirements are as follows:

1. Plan A: Twenty-four hours of graduate level courses (50% must be 600+ level; 2/3 in organized courses). Research required for the master's thesis cannot be included in the required 24 credit hours of course work.
2. Plan B: Thirty hours of graduate courses (50% must be 600+ level; 2/3 in organized courses).
3. Eight hours of core curriculum (see above).
4. The Advisor will work with the student to identify the remainder of hours in the area of the student's specialization.