

# BIOMEDICAL SCIENCES, M.S.

## Degree Requirements (32 Hours)

### Thesis Based MS Option

The MS degree in Biomedical Sciences requires the completion of a series of core courses in basic biomedical topics as well as elective courses in focused areas. The MS degree in Biomedical Science requires at least 32 graduate credit hours. For students electing to engage in research and complete a thesis as part of their degree, no more than 6 hours combined of research (BMSC 780, MCBA 780, MBIM 780 or PHPH 780) and thesis preparation (BMSC 799) may be applied to the required 32 hours. However, students completing a thesis must take at least 1 hour of thesis preparation (BMSC 799) as part of the six research/thesis preparation hours. Of the 32 credit hours, at least 50 percent must be in courses numbered 700 or above, exclusive of thesis preparation credit. Not more than 6 hours of independent study, special topics, or directed research other than thesis research are permitted, unless justified by the program of study and approved by the Dean of the Graduate School. The remainder of the requirements may include courses numbered from 500 to 699 taken for graduate credit. As many as 12 hours of study may be taken in USC schools and colleges other than the School of Medicine; this option provides great flexibility to individually tailor programs and draw on the wider resources of a comprehensive university. The remaining hours should be from courses within the Biomedical Sciences graduate program.

The curriculum consists of required core courses in the basic medical sciences and additional elective courses that depend upon the interest and career goals of the student.

### Core Courses

Include the following:

Course	Title	Credits
Select one of the following:		3-4
BMSC 707	Biochemistry for the Biomedical Sciences	
BMSC 754	Biomedical Biochemistry I	
BIOL 717	Biological Chemistry	
BMSC 700	Introduction to Biomedical Research	1
or BMSC 703	Communication Skills for Pre-Health Professions: Basics and Practice	
BMSC 706	Responsible Conduct of Biomedical Research	2
BMSC 801	Seminar in Biomedical Science	2
Select one of the following:		3-4
BMSC 702	Medical Cell Biology I	
BMSC 708	Human Cell and Molecular Biology for Biomedical Sciences	
BIOL 714	Advanced Cell Biology	
<b>Total Credit Hours</b>		<b>11-13</b>

*Comprehensive Assessment #* Students will demonstrate their ability to synthesize and integrate knowledge across the biomedical discipline via writing and oral defense of the thesis. While focused on a specific biomedical research topic, the thesis will incorporate ideas that span the biomedical field. Likewise, the thesis defense will address topics and issues that span the biomedical sciences including ethical issues

in biomedical research. The thesis and defense thereof will be evaluated by the student's MS Advisory Committee.

### Non-Thesis Option

Students who elect to pursue the Biomedical Sciences MS degree non-thesis option are required to complete the core course work outlined for the thesis option, but in lieu of 6 hours of research credit take an additional 6 hours of course work to better prepare them for their ultimate career goals. This track requires at least 32 graduate credit hours. Of the 32 credit hours, at least 50 percent must be in courses numbered 700 or above. Not more than 6 hours of independent study or special topics are permitted, unless justified by the program of study and approved by the Dean of the Graduate School. The remainder of the requirements may include courses numbered from 500 to 699 taken for graduate credit. As many as 12 hours of study may be taken in USC schools and colleges other than the School of Medicine; this option provides great flexibility to individually tailor programs and draw on the wider resources of a comprehensive university. The remaining hours should be from courses within the Biomedical Sciences graduate program.

*Comprehensive Assessment #* Since individuals pursuing the non-thesis option do not write a thesis, these students will demonstrate their mastery of basic science concepts through the completion of a comprehensive exam given at the end of their course work. This exam will be assembled and evaluated by the student's MS Advisory Committee and should reflect the course work completed during the student's program of study.

### Health Professional Sciences Concentration

This concentration provides further curriculum focus in content areas needed for health professionals and is ideal for students pursuing a non-thesis MS degree. In addition to the core classes required for the non-thesis MS degree, individuals pursuing this concentration must complete the following elective course work as part of the required 32 hours.

Course	Title	Credits
MBIM 710	Basic and Clinical Immunobiology	3
PHPH 701	Physiology for Health Sciences	6
Select two of the following:		
BMSC 740	Human Anatomy for Health Sciences	6
PATH 711	Experimental Pathology	3
BIOL 530	Histology	4

### Applied Biotechnology Concentration (12 hours)

This concentration provides hands-on training on a range of techniques and instrumentation currently used in basic research in pharmaceutical laboratories, biotech companies, and biomedical research laboratories.

It is ideal for students pursuing a thesis MS degree. In addition to the core classes required for the MS degree, individuals pursuing this concentration must complete the following elective coursework as part of the required 32 hours.

Course	Title	Credits
MCBA 740	Biological Microscopic Imaging	3
MCBA 741	Molecular Imaging Methods of Biomedical Research	3
MCBA 742	Biological Micro Imaging II	3
MCBA 743	Molecular Imaging Methods in Biomedical Research II	3
MCBA 720	Special Topics in Microscopic Anatomy	1

BIOS 700	Introduction to Biostatistics	3
BMSC 780	Biomedical Research	5
BMSC 799	Thesis Preparation	1