

APPLIED MICROBIAL SYSTEMS ANALYSIS (MS)

The Master of Science in Applied Microbial Systems Analysis is a professional science master's program that trains students in microbial genomics, microbiome research and general microbiology. This program is specifically designed to train students for employment in the biotechnology, pharmaceutical, diagnostic, government, and academic sectors. This is achieved by combining coursework with advanced laboratory training and internships.

Requirements

At least 33 credits of course work, an internship and passing an exit examination. Credits are selected from an approved menu of courses: minimum of nine credits in core curriculum options, minimum of eight credits in specialized microbiology courses (laboratory or research experience), minimum of five credits in laboratory courses and minimum of seven credits in professional master's cohort courses (communication skills, Frontiers seminars, business practices, internship). In special circumstances the Advisory Committee may waive some of these requirements.

Course	Title	Credits
Core Curriculum Course Options		
Select a minimum of nine credits from the following:		9
MCB 5001	Biochemistry	
MCB 5217	Biosynthesis of Nucleic Acids and Proteins	
MCB 5240	Virology	
MCB 5426	Genetic Engineering and Functional Genomics	
MCB 5621	Molecular Biology and Genetics of Prokaryotes	
MCB 5679	Microbial Physiology	
MCB 5699	Seminar in Microbiology	
Another course with prior approval from the Microbial Systems Analysis Program Director		
Specialized Microbiology Course Options		
Select a minimum of eight credits from the following:		8
ANSC 4341	Food Microbiology and Safety	
ANSC 5618	Probiotics and Prebiotics	
EEB 5349	Phylogenetics	
EEB 5449	Evolution	
MCB 5681	Mechanisms of Bacterial Pathogenicity	
PATH 5201	Microbiology of Atypical Bacteria	
PATH 5202	Viral Pathogenesis	
PATH 5203	Principles of Antibacterial Development	
PATH 5401	Immunobiology	
PATH 5632	Vaccines: Mechanisms of Immune Protection	
Another course with prior approval from the Microbial Systems Analysis Program Director		
Laboratory Course Options		
Select a minimum of five credits from the following:		5
MCB 3637	Practical Methods in Microbial Genomics	

MCB 5427	Laboratory Techniques in Functional Genomics	
MCB 5430	Analysis of Eukaryotic Functional Genomic Data	
MCB 5670	Theory and Practice of Laboratory Techniques in Microbiology	
MCB 5671	Advanced Theory and Practice of Laboratory Techniques in Microbiology	
MCB 5672	Applied Bioinformatics	
MCB 5616	Experiments in Bacterial Genetics	
MCB 6897	Research (one to six credits)	
Another course with prior approval from the Microbial Systems Analysis Program Director		
Professional Master's Cohort Course Options		
Minimum of seven credits. These must include: ¹		
MCB 5490	Industrial Insights	1-2
MCB 5491	Professional Development Seminar (two credits)	2
MCB 5900	Professional Writing and Communication Skills	1
Internship ²		3
Total Credits		29-30

¹ Other possible classes include MCB 5910 Responsible Conduct in Research; MCB 5080 Frontiers in Microbiology; or another course with prior approval from Microbial Systems Analysis Program Director.

² e.g. GRAD 5930 Full-Time Directed Studies (Master's Level)

Note: Only six credits total of 3000 and 4000 level courses may be applied to the graduate degree.