

# APPLIED GENOMICS (MS)

The Master of Science in Applied Genomics is a professional science master's program designed to take advantage of the rapidly advancing area in genomics and 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 as follows: 18 credits in conceptual course options, eight credits in practical coursework (laboratory or research experience) and 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
<b>Conceptual Course Options</b>		
Select a minimum of 18 credits from the following:		18
MCB 3211	Cancer Cell Biology and Genetics	
MCB 4211	Basic Immunology	
MCB 3219	Developmental and Regenerative Biology	
MCB 4416	Forensic Application of DNA Science	
MCB 5217	Biosynthesis of Nucleic Acids and Proteins	
MCB 5240	Virology	
MCB 5284	Current Topics in Cell and Developmental Biology	
MCB 5426	Genetic Engineering and Functional Genomics	
MCB 5445	Genome Dynamics and Epigenetics	
MCB 5452	Problems in Genetics of Eukaryotes	
MCB 5454		
MCB 5471		
MCB 5681	Mechanisms of Bacterial Pathogenicity	
MCB 5895	Special Topics in Molecular and Cell Biology (when taught as Concepts of Genetic Analysis)	
MCB 5884	MCB Research in Progress	
EEB 5348	Population Genetics	
EEB 5349	Phylogenetics	
EEB 5449	Evolution	
KINS 6094	Seminar (when taught as Inherited Metabolic Disorders)	
PHAR 4000		
PHAR 5471	Advanced Pharmacology I: Basic Principles	
PHAR 5472	Advanced Pharmacology II: Drug Disposition	
PHAR 6455	Advanced Toxicology	
PHAR 6484		
PNB 3260	Stem Cell Biology	
PNB 5350	Membrane Transport in Health and Disease	
PNB 5395	Investigation of Special Topics in Physiology and Neurobiology	

SPSS 3230	Biotechnology - Science, Application, Impact, Perception	
STAT 5005	Introduction to Applied Statistics	
STAT 5315	Analysis of Experiments	
Another course with prior approval from the Applied Genomics Program Director		
<b>Practical Coursework Options</b>		
Select a minimum of eight credits from the following:		8
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 6897	Research	
Another course with prior approval from the Applied Genomics Program Director		
<b>Professional Master's Cohort Options</b>		
A minimum of seven credits. These must include: <sup>1</sup>		
MCB 5490	Industrial Insights	1-2
MCB 5491	Professional Development Seminar (two credits)	2
MCB 5900	Professional Writing and Communication Skills	1
Internship <sup>2</sup>		3
<b>Total Credits</b>		<b>33-34</b>

<sup>1</sup> Other possible classes include MCB 5910 Responsible Conduct in Research; MCB 5080 Frontiers in Microbiology; or another course with prior approval from the Applied Genomics Program Director.

<sup>2</sup> 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.