

MICROBIOLOGY AND CELL SCIENCE

Program Information

The Department of Microbiology and Cell Science offers a top-10 education for students who wish to earn their M.S. or Ph.D. in Microbiology and Cell Science. Graduates are well prepared to pursue careers in government, industry, research and teaching in microbiology, cell biology, cellular biochemistry, and molecular genetics. For more information on how to apply for these programs, please visit our Microbiology and Cell Science Graduate Program Website – <http://microcell.ufl.edu/graduate-program/#> (<http://microcell.ufl.edu/graduate-program/>).

Currently there are 25 tenure eligible faculty positions staffed, 2 emeritus faculty, 5 non-tenure eligible faculty, 16 post-doctoral fellows, over 56 graduate students, and 2 full time academic advisors. Most faculty are involved in both teaching and research programs that complement one another. The faculty's research programs span areas of broad interest in the cellular and molecular aspects bacterial, plant and animal life functions. Areas of research include:

- Microbial Biochemistry, Physiology, Metabolism and Regulation
- Molecular Biology
- Molecular Genetics
- Immunology
- Virology
- Host-pathogen Interactions
- Environmental Microbiology
- Bioinformatics
- Functional and Comparative Genomics
- Astrobiology
- Human Parasitology
- Cellular Ultrastructure and Function
- Microbial Communities
- Microbial Processing of Plant Biomass

For more information, please see our website: <http://microcell.ufl.edu>.

For Microbiology and Cell Science Academic Advising, contact Jacqueline Lee at 352-846-1330 or jlee9@ufl.edu.

Degrees Offered

Degrees Offered with a Major in Microbiology and Cell Science

- Doctor of Philosophy
 - without a concentration
 - concentration in Microbial and Cellular Data Science
 - concentration in Toxicology
- Master of Science
 - without a concentration
 - concentration in Medical Microbiology and Biochemistry
 - concentration in Microbiome in Health & Disease

Requirements for these degrees are given in the Graduate Degrees (<http://gradcatalog.ufl.edu/graduate/degrees/>) section of this catalog.

Courses

Microbiology and Cell Science Courses

Code	Title	Credits
BSC 6438	R for Functional Genomics	3
BSC 6459	Fundamentals of Bioinformatics	3
MCB 5205	Microbiology of Human Pathogens	3
MCB 5252	Microbiology, Immunology, and Immunotherapeutics	4
MCB 5305L	Microbial Genetics and Biotechnology Laboratory	2
MCB 5505	General Virology	3
MCB 6151	Prokaryotic Diversity	3
MCB 6317	Molecular Biology of Gene Expression	1
MCB 6318	Comparative Microbial Genomics	2
MCB 6355	Microbial/Host Defense	1
MCB 6407	Prokaryotic Cell Structure and Function	3
MCB 6417	Microbial Metabolism and Energetics	1
MCB 6457	Metabolic Regulation	1
MCB 6465	Microbial Metabolic Engineering	1
MCB 6485	Advanced Techniques in Microbiology and Cell Science	2-4
MCB 6670C	The Microbiome	3
MCB 6772	Advanced Topics in Cell Biology	1
MCB 6781	Extremophiles	3
MCB 6905	Experimental Microbiology	1-8
MCB 6930	Seminar	1
MCB 6937	Special Topics in Microbiology	1-4
MCB 6940	Supervised Teaching	1-5
MCB 6971	Research for Master's Thesis	1-15
MCB 7922	Journal Colloquy	1
MCB 7979	Advanced Research	1-12
MCB 7980	Research for Doctoral Dissertation	1-15
PCB 5136L	Techniques in Microbial and Cell Biology	3
PCB 5235	Immunology	3

Microbiology and Cell Science Departmental Courses

Code	Title	Credits
BSC 6438	R for Functional Genomics	3
BSC 6459	Fundamentals of Bioinformatics	3
BSC 6895C	AI in Agricultural and Life Sciences	3
MCB 5205	Microbiology of Human Pathogens	3
MCB 5215	Clinical Immunology	1
MCB 5252	Microbiology, Immunology, and Immunotherapeutics	4
MCB 5255	Clinical Bacteriology	3
MCB 5256	Clinical Mycology, Virology and Parasitology	3
MCB 5270	Antimicrobial Resistance (AMR)	3
MCB 5305L	Microbial Genetics and Biotechnology Laboratory	2
MCB 5505	General Virology	3
MCB 5655	Clinical Laboratory Ethics, Management, Safety, and Professional Issues	2
MCB 5666	Clinical Research, Assessment, Education, and Quantitative Methods	1
MCB 5705	Astrobiology	3
MCB 5942L	Clinical Microbiology Lab	2

MCB 5945L	Clinical Experience in Microbiology	2
MCB 6095	Careers for Impact in Microbiology and Cell Science	1
MCB 6096	Innovation Project Management for Life Sciences	1
MCB 6151	Prokaryotic Diversity	3
MCB 6317	Molecular Biology of Gene Expression	1
MCB 6318	Comparative Microbial Genomics	2
MCB 6326	Computational Genomics and Epigenomics	3
MCB 6355	Microbial/Host Defense	1
MCB 6407	Prokaryotic Cell Structure and Function	3
MCB 6417	Microbial Metabolism and Energetics	1
MCB 6424	Probiotics	3
MCB 6457	Metabolic Regulation	1
MCB 6458	Post Translational Modifications of Proteins in Microbiology	2
MCB 6465	Microbial Metabolic Engineering	1
MCB 6485	Advanced Techniques in Microbiology and Cell Science	2-4
MCB 6656	Environmental Microbiology	3
MCB 6670C	The Microbiome	3
MCB 6772	Advanced Topics in Cell Biology	1
MCB 6781	Extremophiles	3
MCB 6796	Analysis, Interpretation, and Visualization of Microbiological Data	3
MCB 6900	Final Assessment - Literature Review	1
MCB 6905	Experimental Microbiology	1-8
MCB 6930	Seminar	1
MCB 6937	Special Topics in Microbiology	1-4
MCB 6940	Supervised Teaching	1-5
MCB 6971	Research for Master's Thesis	1-15
MCB 7922	Journal Colloquy	1
MCB 7979	Advanced Research	1-12
MCB 7980	Research for Doctoral Dissertation	1-15
PCB 5136L	Techniques in Microbial and Cell Biology	3
PCB 5235	Immunology	3
PCB 6667	Human Genomics	3

STA 6093	Introduction to Applied Statistics for Agricultural and Life Sciences	3
STA 6329	Matrix Algebra and Statistical Computing	3

Student Learning Outcomes

Microbiology & Cell science (PHD)

SLO 1 Knowledge
Describe orally and in writing, the molecular genetic, biochemical and cellular basis of life

SLO 2 Skills
Discuss orally and in writing, research methodologies for applying the scientific method to the generation of new knowledge

SLO 3 Professional Behavior
Interact with professional peers with honesty, ethical behavior, cultural sensitivity, teamwork, and effective communication.

Microbiology & Cell science (MS)

SLO 1 Knowledge
Describe in writing and orally, the molecular genetic, biochemical and cellular basis of life

SLO 2 Skills
Discuss orally and in writing, research methodologies for applying the scientific method to the generation of new knowledge.

SLO 3 Professional Behavior
Interact with professional peers with honesty, ethical behavior, cultural sensitivity, teamwork, and effective communication.

College of Agricultural and Life Sciences Courses

Code	Title	Credits
ALS 5156	Agricultural Ecology Principles and Applications	3
ALS 5905	Individual Study	1-4
ALS 5932	Special Topics	1-4
ALS 6046	Grant Writing	2
ALS 6166	Exotic Species and Biosecurity Issues	3
ALS 6921	Colloquium on Plant Pests of Regulatory Significance	1
ALS 6925	Integrated Plant Medicine	4
ALS 6931	Plant Medicine Program Seminar	1
ALS 6935	Topics in Biological Invasions	3
ALS 6942	Principles of Plant Pest Risk Assessment and Management	3
ALS 6943	Internship in Plant Pest Risk Assessment and Management	1-10
ANS 6936	Graduate Seminar in Animal Molecular and Cell Biology	1-2
BCH 5045	Graduate Survey of Biochemistry	4
FNR 6933	Seminar	1