

# MICROBIOLOGY AND CELL SCIENCE

## Course Search

Not all courses are offered every semester. Refer to the schedule of courses for each term's specific offerings.

[More Info](#)

*Courses at the University of Florida, with the exception of specific foreign language courses and courses in the online Master of Arts in Mass Communication program, are taught in English.*

## Courses

- BSC 2891 Python Programming for Biology** **3 Credits**  
Discoveries in biology are driven as much by computer analysis as by laboratory work. Learn the theory and practice of computer programming with emphasis on the practical techniques and problem solving skills required to use computer programming in biological research. Taught completely online.
- BSC 4434C Introduction to Bioinformatics** **3 Credits**  
Lecture and hands-on computer laboratories emphasize data-mining tools freely available in web-based resources that predict gene function from DNA, RNA, and protein sequences.  
**Prereq:** MCB 3020 or MCB 3023 or BCH 4024 or CHM 3218 with a minimum grade of C
- BSC 4913 Independent Research in Bioinformatics** **3 Credits**  
Mentored research experience at the interface between computational and biological sciences; preparation for competitive graduate-school and industry positions in bioinformatics.  
**Prereq:** BSC 2891 or MCB 4320C or BSC 4434 or BSC 4434C with a minimum grade of C
- BSC 4914 Advanced Independent Research in Bioinformatics** **3 Credits**  
Mentored bioinformatics research experience that challenges students to develop a deeper understanding of bioinformatics methodologies, to frame biological questions, to evaluate primary scientific literature and to present their research in formal written and oral presentations.  
**Prereq:** BSC 4913 with a minimum grade of C
- MCB 2000 Microbiology** **3 Credits**  
Role of microorganisms in chemical transformations, disease, public health and agriculture. Fundamental concepts are discussed, followed by beneficial and harmful actions of microorganisms as they affect our lives. Suitable as a general education science course, but not acceptable for admission to advanced microbiology courses nor for the preprofessional curricula required for the medical/veterinary sciences. (B)  
General Education - Biological Science
- MCB 2000L Microbiology Laboratory** **1 Credit**  
Laboratory exercises demonstrate biochemical transformations and present methods for studying microbial properties. Suitable as a general education science course, but not acceptable for admission to advanced microbiology courses nor for the preprofessional curricula required for the medical/veterinary sciences.  
**Coreq:** MCB 2000
- MCB 2006 Microbes without Borders** **3 Credits**  
Introduces the amazing world of microbiology; microbes play a significance role for individuals, for our communities, and for the whole planet. Readings, discussions, and activities provide a mind-opening, global journey to acknowledge the great things microbes do for us.
- MCB 3015C Lab Skills Bootcamp** **1 Credit**  
Provides a foundation and advanced skills all biological science students should master. Emphasizes analytical, computational, communication and other lab skills above and beyond bench work.  
**Prereq:** BSC 2010 or equivalent, AG majors or MCY majors only  
**Coreq:** CHM 2045 or equivalent
- MCB 3020 Basic Biology of Microorganisms** **3 Credits**  
Introduces the principles and techniques of microbiology, genetics, taxonomy, biochemistry and ecology and microorganisms. Also studies virology, immunology, and the pathogenicity of microorganisms. (B)  
**Prereq:** BSC 2010 and BSC 2010L, or ISC 2400L, or ISC 2401L, or equivalent, with minimum grades of C  
**Coreq:** CHM 2200 or CHM 2210  
General Education - Biological Science
- MCB 3020L Laboratory for Basic Biology of Microorganisms** **1 Credit**  
Laboratory exercises on the structure, nutrition and growth of prokaryotic and eukaryotic cells. Includes isolation and classification of representative microorganisms.  
**Coreq:** MCB 3020; non-microbiology majors only
- MCB 3023 Principles of Microbiology** **3 Credits**  
Introduces the principles and techniques of microbiology, genetics, taxonomy, biochemistry, and ecology of microorganisms. Required of all majors and students who will enroll in more advanced courses in the Department of Microbiology and Cell Science.  
**Prereq:** BSC 2010 and BSC 2010L, or ISC 2400L, or ISC 2401L, or equivalent, with minimum grades of C  
**Coreq:** CHM 2200 or CHM 2210, with minimum grade of C
- MCB 3023L Principles of Microbiology Laboratory** **2 Credits**  
Laboratory techniques on the structure, nutrition, biochemistry, genetics, and growth of microorganisms. Required of all majors and students who will enroll in more advanced courses in the Department of Microbiology and Cell Science.  
**Prereq:** MCB or MCY major  
**Coreq:** MCB 3023
- MCB 3703 Astrobiology** **3 Credits**  
Examines the origin, evolution and future of life in our solar system. Include planetary habitability, astrobiogeochemistry, microbial life, and human space flight. (WR)  
**Prereq:** introductory course in microbiology, astronomy, chemistry, physics or geology  
WR4
- MCB 3933 Professional Development in Microbiology and Cell Science** **1-2 Credits**  
Assistance in making career decisions and organizing supporting academic credentials. Emphasizes the wide variety of career opportunities and professional development tools applicable to careers in professional schools, academia, industry, and alternative professions.  
**Prereq:** BSC 2011 and CHM 2045 or equivalent
- MCB 4034L Advanced Microbiology Laboratory** **1 Credit**  
Application of immunological, molecular biological and microbial techniques to the isolation, identification, and characterization of bacteria and viruses.  
**Prereq:** MCB 3020 or MCB 3023, MCB 3020L or MCB 3023L with minimum grades of C

<p><b>MCB 4150 Prokaryotic Diversity</b> <b>3 Credits</b>            Introduces the diversity of bacteria and archaea. Discussions provide a conceptual and historical framework for understanding their origin and evolution; morphological, metabolic, and molecular characteristics; genetic and physiological diversity; importance in human, animal, and plant health; and roles in elemental cycling.  <b>Prereq:</b> MCB 3020 or MCB 3023 with a minimum grade of C</p>	<p><b>MCB 4782 Archaea and Biotechnology</b> <b>3 Credits</b>            Learn About the Evolution, Physiology, and Molecular Biology of Archaea, Including Extremophiles. Examine Principles of Energy Production and Biosynthesis in Aerobic and Anaerobic Habitats and Explore Research That Incorporates Cutting-Edge Techniques and Biotechnology Applications for Using Archaea to Solve Real World Problems.  <b>Prereq:</b> CHM 2211 and either MCB 3020 or MCB 3023 with either MCB 3020L or MCB 3023L</p>
<p><b>MCB 4203 Bacterial Pathogens</b> <b>3 Credits</b>            Host-microbe relationships in the diseases of humans and animals, including the virulence characteristics of bacterial pathogens, the techniques used in their isolation/identification, and molecular approaches to the study of their virulence.  <b>Prereq:</b> MCB 3020 or MCB 3023 with minimum grade of C</p>	<p><b>MCB 4905 Independent Study</b> <b>4 Credits</b>            Individual laboratory research under the guidance of a faculty member. Required of, but not limited to, candidates for high and highest honors. Not acceptable toward 25 credits of required department and elective credits. (S-U)  <b>Prereq:</b> undergraduate advisor permission</p>
<p><b>MCB 4304 Genetics of Microorganisms</b> <b>3 Credits</b>            Molecular biology of bacterial gene expression, including DNA replication, mutation, genetic mapping using plasmids and phages, and recombinant DNA mechanisms.  <b>Prereq:</b> MCB 3020 or MCB 3023, and MCB 3020L or MCB 3023L with minimum grades of C</p>	<p><b>MCB 4911 Supervised Research in Microbiology and Cell Science</b> <b>3 Credits</b>            Firsthand, authentic research in microbiology and cell science under the supervision of a faculty member. Projects may involve inquiry, design, investigation, scholarship, discovery or application. (S-U)</p>
<p><b>MCB 4320C The Microbiome</b> <b>3 Credits</b>            Increase knowledge, appreciation, and use of genomics pertaining to the breadth of microbial diversity across a wide variety of organisms and habitats using methods that do not require culturing of the myriad of inhabitants. Use tools, practice analysis, and interpretation of genomic data sets to analyze different microbiomes.  <b>Prereq:</b> MCB 3020 or MCB 3023 with minimum grades of C</p>	<p><b>MCB 4915 Honors Thesis Research in Microbiology and Cell Science</b> <b>3 Credits</b>            Independent research in microbiology and cell science leading to an honors thesis. Student will be mentored by a faculty member. Projects may involve inquiry, design, investigation, scholarship, discovery or application. (S-U)  <b>Prereq:</b> junior standing, upper division GPA of 3.75 or higher and completed honors thesis proposal on file</p>
<p><b>MCB 4325C R for Functional Genomics</b> <b>3 Credits</b>            Introduces the Basics of the R Language and to state of the art methods for functional genomics data analysis. Learn how to write R scripts, choose appropriate statistical tools, and how to use Linux environments to analyze high-throughput genomics data.  <b>Prereq:</b> STA 2023 and BSC 2010, BSC 2011, MCB 3020, MCB 3023, BCH 4024, or CHM 3218</p>	<p><b>MCB 4934 Special Topics in Microbiology and Cell Science</b> <b>1-4 Credits</b>            Supervised literature or historical study on current topics in microbiology and cell science. Not acceptable toward 25 credits of required department and elective credits.  <b>Prereq:</b> undergraduate coordinator permission</p>
<p><b>MCB 4403 Prokaryotic Cell Structure and Function</b> <b>3 Credits</b>            Analyzes the cell structure and physiology of bacterial cells. Extensive discussion of cell division and cell growth is provided along with descriptions of important bacterial cell structures (e.g. cell walls, membranes, flagella, etc.)  <b>Prereq:</b> CHM 2211, and MCB 3020 or MCB 3023, and MCB 3020L or MCB 3023L with minimum grades of C</p>	<p><b>MCB 4941 Microbiology and Cell Science Internship</b> <b>1-4 Credits</b>            Internship in microbiology and cell science under supervision of the department.</p>
<p><b>MCB 4503 General Virology</b> <b>3 Credits</b>            Nature of viruses and mechanisms of infection and replication, including bacterial, animal, and plant viruses.  <b>Prereq:</b> MCB 3020 or MCB 3023 or MCB 4203 or PCB 3023 or BCH 3023 or PCB 3134 with minimum grade of C</p>	<p><b>NUR 3197 Genetics and Genomics in Health Care</b> <b>2 Credits</b>            Genetics and genomics are advancing quickly and will play a greater role in health care as personal genome sequencing becomes available. Reinforces basic genetics and genomics concepts and exploring how genomics may affect health care.  <b>Prereq:</b> nursing major</p>
<p><b>MCB 4652 Environmental Microbiology</b> <b>3 Credits</b>            Overview of microorganisms in the environment including occurrence, abundance and distribution; processes of microbial interaction with the environment; and practices of applied environmental microbiology.  <b>Prereq:</b> MCB 3020, MCB 3023 or equivalent introductory microbiology course with minimum grade of C</p>	<p><b>PCB 1051 Exploring Your Genome</b> <b>3 Credits</b>            How the genome sequence is analyzed and its implications on human health. Promotes genetic literacy (see syllabus for specific topics).</p>
	<p><b>PCB 3134 Eukaryotic Cell Structure and Function</b> <b>3 Credits</b>            Lecture and discussions in the field of cell biology with emphasis on the interrelation of structure and function, the regulation of metabolism and the specialized activities of plant and animal cells.  <b>Prereq:</b> BSC 2010 and BSC 2010L, or equivalent, with minimum grades of C  <b>Coreq:</b> CHM 2211 and CHM 2211L</p>
	<p><b>PCB 4233 Immunology</b> <b>3 Credits</b>            Basic concepts in immunology, including specific components, development and function.  <b>Prereq:</b> MCB 3023 or MCB 3020 with minimum grade of C</p>

**PCB 4522 Molecular Genetics 3 Credits**

Molecular biology of prokaryotes and eukaryotes covering the fundamentals of genome organization and gene structure, regulation of transcription, DNA replication and repair, and RNA processing. Also includes discussion of strategies, vectors and applications of genetic engineering in higher plants and animals.

**Prereq:** BSC 2010 and BSC 2010L with minimum grades of C

**ZOO 4232 Human Parasitology 3 Credits**

Host-parasite relationships of helminth and protozoan diseases important in health sciences and veterinary medicine.

**Prereq:** BSC 2010 and BSC 2010L, or equivalent

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