

# MICROBIOLOGY (MBIO)

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## MBIO 101 Introduction to the Microbiology Major

**Notes:** Letter grade only.

**Description:** Introduction to the Microbiology major by providing an overview of Microbiology as a field of science, possible career paths, and opportunities available to Microbiology majors.

**Credit Hours:** 1

**Max credits per semester:** 1

**Max credits per degree:** 1

**Grading Option:** Graded

**Offered:** FALL

## MBIO 418 Microbial Genetics & Genomics

**Crosslisted with:** PLPT 418, PLPT 818

**Prerequisites:** BIOS 206 or PLAS 215.

**Notes:** BIOS 312 is recommended.

**Description:** Inheritance, exchange, and regulation of genes in prokaryotic microorganisms: gene structure and function; gene transfer and the elements (plasmids, phages, and transposons) involved; DNA mutations, repair, and genetic analysis; genome sequencing, microbial genome databases, and global gene expression analysis.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded

## MBIO 420 Molecular Genetics

**Crosslisted with:** BIOS 420, BIOS 820, VBMS 820

**Prerequisites:** BIOS 206 and Senior standing

**Description:** Molecular basis of genetics. Gene structure and regulation, transposable elements, chromosome structure, DNA replication, and repair mechanisms and recombination.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** AGRO 963, HORT 963, PLPT 963; BIOS 945; BIOS 964, VBMS 964; FDST 908B

**ACE:** ACE 10 Integrated Product

## MBIO 421 Microbial Diversity

**Crosslisted with:** BIOS 421, BIOS 821

**Prerequisites:** BIOS 206 and BIOS 312 and Senior Standing.

**Description:** Diversity of microbial cell composition, structure, and function enabling movement, metabolism, symbiosis, and adaptation using bacterial, fungal, algal, and viral examples. A physiological, biochemical and molecular approach used throughout.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**ACE:** ACE 10 Integrated Product

## MBIO 440 Microbial Physiology

**Crosslisted with:** BIOS 440, BIOS 840, VBMS 840, VBMS 440

**Prerequisites:** BIOS 312; BIOS 313 or BIOS 314.

**Description:** Molecular approaches to the study of prokaryotic cell structure and physiology, including growth, cell division, metabolism, and alternative microbial life styles.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Course and Laboratory Fee:** \$20

## MBIO 443 Immunology

**Crosslisted with:** BIOS 443, BIOS 843, VBMS 843, VBMS 443

**Prerequisites:** BIOS 206; CHEM 251 or CHEM 255 or CHEM 261.

**Description:** Fundamental consideration of cellular and humoral mechanisms of immunity, the structure and function of immunoglobulins, antigen-antibody interactions; hypersensitivity; transplantation and tumor immunity; immune and autoimmune disorders.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** VBMS 852; VBMS 908; VBMS 910; VBMS 948; VBMS 949

## MBIO 455 Microbiology of Fermented Foods

**Crosslisted with:** FDST 455, FDST 855

**Prerequisites:** BIOS 312

**Notes:** On-campus students must also register for FDST 455L/855L.

**Description:** Physiology, biochemistry, and genetics of microorganisms important in food fermentation. How microorganisms are used in fermentation and the effects of processing and manufacturing conditions on production of fermented foods.

**Credit Hours:** 2

**Max credits per semester:** 2

**Max credits per degree:** 2

**Grading Option:** Graded with Option

**Offered:** SPRING

## MBIO 455L Microbiology of Fermented Foods Laboratory

**Crosslisted with:** FDST 455L, FDST 855L

**Prerequisites:** FDST 405/805 and parallel FDST 455/855/MBIO 455

**Description:** Experiments involving the microorganisms and fermentation of foods and beverages.

**Credit Hours:** 1

**Max credits per semester:** 1

**Max credits per degree:** 1

**Grading Option:** Graded with Option

**Offered:** SPRING

## MBIO 498 Independent Research

**Prerequisites:** Permission; LIFE 120 and 121.

**Notes:** Letter grade only. Before registering, arrangements must be made with a microbiology faculty member to reach an agreement on the scope and to determine the amount of credit for the project.

**Description:** Independent study and laboratory or field investigation of a specific problem.

**Credit Hours:** 1-6

**Min credits per semester:** 1

**Max credits per semester:** 6

**Max credits per degree:** 12

**Grading Option:** Graded