

MICROBIOLOGY

The microbiology lecture (MICR R100) and lab (MICR R100L) are intended for those pursuing careers in dental hygiene, allied health, nursing, medicine, biotechnology, pharmacology and clinical laboratory sciences.

The lecture is a survey of basic microbiology at the lower division level which in conjunction with the lab satisfies prerequisite requirements for professional programs. The lab is well suited to teach both classical and modern methods of laboratory science for microbiology. Techniques covered in the lab include Gram stain, biochemical identification of unknown bacteria using single tube and multi-tube assays, antibiotic resistance assays, blood agar throat culture, gel electrophoresis RFLP analysis, plasmid DNA transformation, nonpathogen viral plaque assay, PCR and DNA Sanger sequencing of the unknown bacteria using the NCBI blast program, and finally an assay to determine the composition of the oral microbiome using Illumina NGS sequencing. The equipment instruction will include micropipettors, high speed centrifuges, biosafety cabinets, lyophilizer, PCR machine nanodrop and other contemporary instruments. The lab is suitable for in person requirements for both direct placement in professional programs and for skill upgrades of those currently employed. This five unit course satisfies all known undergraduate microbiology lecture and lab requirements nationally.

MICR R100 Principles of Microbiology 3 Units

In-Class Hours: 52.5 lecture

Prerequisites: Course taught at the level of intermediate algebra or placement as determined by the college's multiple measures assessment process and CHEM R104 (or higher) and ANAT R101 and PHSO R101 and BIOL R101 or BIOL R101H or BIOL R120

Advisories/Rec Prep: ENGL R101

This course is an introduction to the structure, metabolic activities, utility and pathogenicity of bacteria, fungi, algae, protozoa and viruses. The topics will include distribution, metabolism, molecular genetics, biotechnology, immunity, cancer, probiotics and the physical/chemical methods used in control of microbes and cellular pathogens. The principles of disease transmission, prevention and immunity will also be presented. The diversity of the microbial world and its applications to improving human health and quality of life are emphasized.

Grade Modes: Letter Graded

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B2

IGETC: 5B

MICR R100L Principles of Microbiology Laboratory 2 Units

In-Class Hours: 105 laboratory

Prerequisites: MICR R100 or concurrent enrollment

This course is an introduction to the structure, metabolic activities, utility and pathogenicity of bacteria, fungi, algae, protozoa and viruses. The topics will include distribution, metabolism, molecular genetics, biotechnology, immunity, cancer, probiotics and the physical/chemical methods used in control of microbes and cellular pathogens. The principles of disease transmission, prevention and immunity will also be presented. The diversity of the microbial world and its applications to improving human health and quality of life are emphasized.

Grade Modes: Letter Graded

Degree Applicability: Applies to Associate Degree

AA/AS GE: A1

Transfer Credit: CSU, UC

UC Credit Limitations: None

CSU GE-Breadth: B3

IGETC: 5C

MICR R199 Directed Studies in Microbiology Related Topics 1-3 Units

In-Class Hours: 52.5-157.5 laboratory

Prerequisites: BIOL R100 and BIOL R100L; or BIOL R101 and BIOL R101L; or, MST R100 and MST R100L; or, BIOL R120 and BIOL R120L

Designed for students interested in furthering their knowledge of Microbiology on an independent study basis. These studies may require a combination of laboratory and library research. Project findings will be presented in a scientific poster format, video, protocol or research publication.

Catalog Notes: Undergraduate Research in Molecular Microbiology and Genetics.

Grade Modes: Letter Graded

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU

UC Credit Limitations: None

CSU GE-Breadth: None

IGETC: None