

# MICROBIOLOGY (MICROBIO)

## MICROBIO 100 – THE MICROBIAL WORLD

3 credits.

Primarily for non-science majors. Roles of microorganisms and viruses in nature, health, agriculture, pollution control and ecology. Principles of disease production, epidemiology and body defense mechanisms. Biotechnology and the genetic engineering revolution.

**Requisites:** Not open to students with credit for MICROBIO 101 or 303.

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Summer 2023

## MICROBIO 101 – GENERAL MICROBIOLOGY

3 credits.

Survey of microorganisms and their activities; emphasis on structure, function, ecology, nutrition, physiology, genetics. Survey of applied microbiology--medical, agricultural, food and industrial microbiology. Intended to satisfy any curriculum which requires introductory level microbiology.

**Requisites:** CHEM 103, 108, 109, or 115. Not open to students with credit for MICROBIO 303

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Summer 2023

## MICROBIO 102 – GENERAL MICROBIOLOGY LABORATORY

2 credits.

Covers techniques and procedures used in general microbiology, including cultivation, enumeration, aseptic techniques, physiology and selected applications.

**Requisites:** MICROBIO 101, 303 or concurrent enrollment. Not open to students with credit for MICROBIO 304.

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Summer 2023

## MICROBIO 299 – INDEPENDENT STUDY

1-3 credits.

Research work for students under direct guidance of a faculty member in an area encompassing Microbiology. Students are responsible for arranging the work and credits with the supervising instructor.

**Requisites:** Consent of instructor

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2023

## MICROBIO 303 – BIOLOGY OF MICROORGANISMS

3 credits.

Basic biology of microorganisms, including structure, function, physiology, genetics, ecology, diversity, and evolution.

**Requisites:** (ZOOLOGY/BIOLOGY 101, ZOOLOGY/BIOLOGY/BOTANY 151, BIOCORE 383, or BIOLOGY/BOTANY 130) and (CHEM 104 or 109) or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Summer 2023

## MICROBIO 304 – BIOLOGY OF MICROORGANISMS LABORATORY

2 credits.

Introduction to modern laboratory techniques used to study the distribution and properties of microorganisms.

**Requisites:** MICROBIO 303 or concurrent enrollment

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Summer 2023

## MICROBIO 305 – CRITICAL ANALYSES IN MICROBIOLOGY

1 credit.

Train students to become scientific problem-solvers, to critically analyze data, and to comprehend the principles of microbiological research via active discussion of a combination of scholarly papers and contemporary, hot topics in our field.

**Requisites:** MICROBIO 303 or concurrent enrollment

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**MICROBIO/FOOD SCI 324 – FOOD MICROBIOLOGY LABORATORY**

2 credits.

Lab exercises dealing with food preservation, spoilage, and food poisoning. Isolation, identification and quantification of specific microbes occurring in foods, and food fermentations by bacteria and yeast.

**Requisites:** (MICROBIO 102 or MICROBIO 304) and FOOD SCI/ MICROBIO 325 or concurrent enrollment

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Fall 2022

**MICROBIO/FOOD SCI 325 – FOOD MICROBIOLOGY**

3 credits.

Principles of food preservation, epidemiology of foodborne illness, agents of foodborne illness, food fermentations and biotechnology.

**Requisites:** MICROBIO 101, 303, or M M & I 301 or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Fall 2022

**MICROBIO 330 – HOST-PARASITE INTERACTIONS**

3 credits.

Interrelationships between bacterial and viral parasites and their host cells or tissues. Stresses microbial strategies and mechanisms of colonization, invasion, pathogenesis and resistance of host defenses.

**Requisites:** MICROBIO 101 or 303 or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2018

**MICROBIO/AN SCI/BOTANY 335 – THE MICROBIOME OF PLANTS, ANIMALS, AND HUMANS**

3 credits.

Examination of the structure and function of microbial communities that live inside and on host organisms (plants, animals, and humans). Introduction to general concepts of the microbiome and microbiota, and their relationship to host nutrition, health, and disease.

**Requisites:** MICROBIO 101 or 303 or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**MICROBIO 345 – INTRODUCTION TO DISEASE BIOLOGY**

3 credits.

Introduces the rich biology of infectious disease and how it impacts the biology of humans and other organisms, through the lens of global health. Steps beyond a narrow focus on the biological dimensions of disease to also cover the social, political, and cultural factors that shape the spread and persistence of disease in natural populations. Includes a survey of the various types of pathogens and the science behind infection, transmission, evolution, and virulence.

**Requisites:** ZOOLOGY/BIOLOGY 101, BOTANY/BIOLOGY 130, ZOOLOGY/BIOLOGY/BOTANY 151, or BIOCORE 381

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**MICROBIO 375 – SPECIAL TOPICS**

1-4 credits.

Specialized subject matter of current interest to undergraduate students.

**Requisites:** None

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2020

**MICROBIO 399 – COORDINATIVE INTERNSHIP/COOPERATIVE EDUCATION**

1-8 credits.

An internship under guidance of a faculty or instructional academic staff member in the Bacteriology department and a internship site supervisor. Students are responsible for arranging the work and credits with the faculty or instructional academic staff member and the internship site supervisor.

**Requisites:** Consent of instructor

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Workplace - Workplace Experience Course

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Fall 2013

**MICROBIO 400 – STUDY ABROAD IN MICROBIOLOGY**

1-6 credits.

Provides an area equivalency for courses taken on Madison Study Abroad Programs that do not equate to existing UW courses.

**Requisites:** None

**Repeatable for Credit:** Yes, unlimited number of completions

**MICROBIO/SOIL SCI 425 – ENVIRONMENTAL MICROBIOLOGY**

3 credits.

Microbial interactions in soils, water, extreme environments and biofilms. Modern methods for studying microbial ecology. role of microbes in nutrient cycles and biogeochemistry. Use of microbes for mitigating manmade environmental problems of industrial, agricultural, and domestic origin.

**Requisites:** MICROBIO 303 and (CHEM 341 or 343), or graduate/professional standing

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Fall 2022

**MICROBIO 450 – DIVERSITY, ECOLOGY AND EVOLUTION OF MICROORGANISMS**

3 credits.

Fundamental concepts relating to the phylogenetic diversity, ecology and evolution of microbes. Active learning methods applying these concepts will promote a deeper understanding of microbiology.

**Requisites:** MICROBIO 303 or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**MICROBIO 470 – MICROBIAL GENETICS & MOLECULAR MACHINES**

3 credits.

Examines modern microbial genetics and molecular processes. Emphasis on the use of eubacterial and eukaryotic microbes to elucidate cellular function. Discussion of experimental approaches to study microbes and their use in biotechnology, bioremediation, and medicine.

**Requisites:** MICROBIO 303 or concurrent enrollment or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**MICROBIO 520 – PLANETARY MICROBIOLOGY: WHAT LIFE HERE TELLS US ABOUT LIFE OUT THERE**

3 credits.

Connects the molecular underpinnings of life with corresponding planetary scale changes in geochemistry. Focuses on the dynamics between life and environment over planet Earth's history from a microbial and molecular perspective, including the origins of life, and emergence of essential metabolisms and their evolution across billions of years of planetary evolution. Discusses how innovations such as translation machinery and carbon and nitrogen fixation were impacted by significant changes in the environment. Examines how understanding the origins of life on Earth may allow for the recognition of life elsewhere in the universe by exploring, assessing, and discussing various signs of life and the processes that expands life to planetary scale.

**Requisites:** MICROBIO 101 or 303 or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**MICROBIO/SOIL SCI 523 – SOIL MICROBIOLOGY AND BIOCHEMISTRY**

3 credits.

Transformations of nutrients and contaminants in soils and groundwater by microorganisms: emphasis on enzymatic mechanisms and metabolic pathways. Approaches for analyzing microbial populations and activities including molecular techniques. Applications of microbial activities for bioremediation of contaminated soils and groundwater. Students should have completed one course in either Soil Science or Microbiology to feel comfortable with the course content.

**Requisites:** Senior standing, (CHEM 104, 109, or 116) and (ZOOLOGY/BIOLOGY 102, BOTANY/BIOLOGY 130, or ZOOLOGY/BIOLOGY/BOTANY 151), or graduate/professional standing

**Course Designation:** Breadth - Physical Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**MICROBIO 525 – FIELD STUDIES OF PLANETARY MICROBIOLOGY AND LIFE IN THE UNIVERSE**

3 credits.

Explores the origins, early evolution, and most common traces left by our planet's form of microbial life. Discovery and interpretation of microbial biosignatures in the context of a simulated surface lander mission through travel to field sites. Introduction to microbial biosignatures as inferred through satellite and drone imagery interpretation, portable XRF elemental analysis, UV-VIS-IR spectrophotometry, body and trace fossil analysis and interpretation, and metagenome sequencing. Explore evidence and methods of detection of life on other planets.

**Requisites:** MICROBIO 520 or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**MICROBIO 526 – PHYSIOLOGY OF MICROORGANISMS**

3 credits.

Biochemistry of microbial processes.

**Requisites:** (BIOCHEM 501 or 507 or concurrent enrollment) or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**MICROBIO 527 – ADVANCED LABORATORY TECHNIQUES IN MICROBIOLOGY**

2 credits.

Provides a foundation in modern methods of research in the biomedical sciences. Coaching and practice in hypothesis-driven scientific questions, critical data analysis, and scientific writing.

**Requisites:** Declared in Microbiology and MICROBIO 304

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Fall 2022

**MICROBIO/ONCOLOGY 545 – TOPICS IN BIOTECHNOLOGY**

1 credit.

Seminars on current topics in agricultural, medical, and industrial biotechnology such as: microbiological production of food, drink, biopharmaceuticals; production methods, genetic engineering (vectors, recombination cloning), continuous fermentation; bioconversion processes and production of chemicals from biomass; plant biotechnology; transgenic animals.

**Requisites:** (ZOOLOGY/BIOLOGY 101, ZOOLOGY/BIOLOGY/BOTANY 151, BIOCORE 383, or BIOLOGY/BOTANY 130) and (CHEM 104 or 109) or graduate/professional standing

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2023

**MICROBIO 551 – CAPSTONE RESEARCH PROJECT IN MICROBIOLOGY**

2 credits.

Conduct independent research in either a PI's laboratory or in small groups in microbiology teaching laboratories. Discuss progress of projects and research ethics, write a research proposal, and prepare and present a poster with final results for the department Poster Session. The in-class students use microbiological, molecular, and bioinformatic approaches to investigate the microbial ecology of environmental microbial communities. Research-lab students will progress toward goals established by the research mentor / PI.

**Requisites:** MICROBIO 527

**Course Designation:** Gen Ed - Communication Part B

Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**MICROBIO 607 – ADVANCED MICROBIAL GENETICS**

3 credits.

Molecular genetic methods and related aspects of prokaryotic and lower eukaryotic biology, as well as critical analysis of the scientific literature. Approximately two-thirds of the course will focus on prokaryotes and one-third on lower eukaryotic microbes.

**Requisites:** MICROBIO 470 or GENETICS 468 or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2018

**MICROBIO/BIOCHEM/GENETICS 612 – PROKARYOTIC MOLECULAR BIOLOGY**

3 credits.

Molecular basis of bacterial physiology and genetics with emphasis on molecular mechanisms; topics include nucleic acid-protein interactions, transcription, translation, replication, recombination, regulation of gene expression.

**Requisites:** (BIOCHEM 501 or 507) and (MICROBIO 470, GENETICS 466 or 468) or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2022

**MICROBIO 626 – MICROBIAL AND CELLULAR METABOLOMICS**

3 credits.

Provides an in-depth exploration of the use of mass spectrometry-based metabolomic approaches for the quantitative investigation of microbial and mammalian cellular metabolic processes. Using recent examples from primary literature, highlights the application of metabolomics, lipidomics, and metabolic flux analysis to diverse areas, including rational engineering of metabolic pathways, microbial biofuel production, discovery and characterization of new biochemical pathways, metabolic interactions within microbial communities, biochemical capabilities of the human gut microbiome, and mammalian cell metabolism.

**Requisites:** (BIOLOGY/ZOOLOGY 101, BOTANY/BIOLOGY/ZOOLOGY 151, BIOCORE 383, or BOTANY/BIOLOGY 130), (CHEM 341 or 343), and (BIOCHEM 301, 501, or 507), or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**MICROBIO 632 – INDUSTRIAL MICROBIOLOGY/BIO TECHNOLOGY**

2 credits.

Application of modern techniques of genetics and physiology to the large-scale production of microbial products; industrial strain improvement; scale-up of microbial processes; survey of industrial processes using microorganisms.

**Requisites:** MICROBIO 526 or (BIOCHEM 507 and 508) or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2017

**MICROBIO 657 – BIOINFORMATICS FOR MICROBIOLOGISTS**

3 credits.

Provides a practical and fundamental introduction to sequence-based analysis focused on microbial systems. Emphasis on gaining a basic understanding of the principles of both classical and newer algorithms useful for bioinformatic analysis. Topics include: BLAST; RNA-seq analysis; transcriptional binding prediction; genome sequence assembly, analysis and annotation; and comparative genomics. Note that this course requires that each student have access to a laptop that runs a linux/unix Operating System such as a Mac or a ChromeBook. PC Laptops running a VM are also acceptable. No prior knowledge of computational biology is required.

**Requisites:** MICROBIO 303, BIOCHEM 501, GENETICS 466, or 467 or graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**MICROBIO/BMOLCHEM 668 – MICROBIOLOGY AT ATOMIC RESOLUTION**

3 credits.

Three-dimensional protein structures form the basis for discussions of high resolution microbiology; how particular problems are solved with given protein architectures and chemistries and how themes of protein structure are modified and recycled.

**Requisites:** (BIOCHEM 501 or 507) and (MICROBIO 470 or 612) or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**MICROBIO 681 – SENIOR HONORS THESIS**

2-3 credits.

Individual study for majors completing theses for Honors degrees as arranged with a faculty member.

**Requisites:** Consent of instructor

**Course Designation:** Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Honors - Honors Only Courses (H)

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**MICROBIO 682 – SENIOR HONORS THESIS**

2-4 credits.

Second semester of individual study for majors completing theses for Honors degrees as arranged with a faculty member.

**Requisites:** Consent of instructor

**Course Designation:** Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Honors - Honors Only Courses (H)

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**MICROBIO 691 – SENIOR THESIS**

2 credits.

Individual study for majors completing theses as arranged with a faculty member.

**Requisites:** Consent of instructor**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Fall 2021**MICROBIO 692 – SENIOR THESIS**

2 credits.

Second semester of individual study for majors completing theses as arranged with a faculty member.

**Requisites:** Consent of instructor**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Spring 2022**MICROBIO 699 – SPECIAL PROBLEMS**

1-4 credits.

Individual advanced work in an area of Microbiology under the direct guidance of a faculty member.

**Requisites:** Consent of instructor**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Summer 2023**MICROBIO 710 – MICROBIAL SYMBIOSIS**

3 credits.

Covers the themes and diversity of plant and animal associations with microbes with an emphasis on beneficial relationships. Examples will be drawn from recent literature.

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2023**MICROBIO 731 – SEMINAR**

1 credit.

Reviews of microbiological subjects, and reports on research work.

**Requisites:** Declared in Microbiology doctoral program**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2023**MICROBIO 810 – CURRENT ISSUES IN MICROBIOLOGY**

1 credit.

Explores the diversity of scientific topics comprising the field of contemporary microbiology.

**Requisites:** Declared in Microbiology doctoral program**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2022**MICROBIO 811 – ADVANCED PROBLEMS IN MICROBIOLOGY**

1 credit.

Explores the diversity of scientific topics comprising the field of contemporary microbiology.

**Requisites:** Declared in Microbiology doctoral program**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2023**MICROBIO 875 – SPECIAL TOPICS**

1-4 credits.

Specialized subject matter of current interest to graduate students.

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2023**MICROBIO 899 – INDEPENDENT STUDY**

1-9 credits.

Independent study or research under the direction of a faculty member in the area of biological science.

**Requisites:** Consent of instructor**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**MICROBIO 901 – ADVANCED SEMINAR**

1 credit.

Recent advances in specialized areas of microbiology.

**Requisites:** Consent of instructor**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2017**MICROBIO/BIOCHEM 917 – REGULATION OF GENE EXPRESSION (ADVANCED SEMINAR)**

1 credit.

Analysis of recent literature in topics related to prokaryotic and eukaryotic gene regulation, including regulation of transcription, translation, and genome organization.

**Requisites:** Consent of instructor**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2023

**MICROBIO 990 – RESEARCH**

1-9 credits.

Full lab and literature review of a problem in microbiology. Leads to preparation of thesis and publication.

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Summer 2023