

Concentration in

MICROBIOLOGY

Microbiology is the study of organisms that are too small to be seen with the naked eye. This includes, Bacteria, Archaea, viruses, and single-celled eukaryotes. Microorganisms, or microbes, thrive in nearly all environments, from deep sea thermal vents to the human gut where it is estimated that there are more bacteria present than eukaryotic cells in the human body. Microbes perform important functions as part of biogeochemical cycling, bioremediation, biotechnology, and are critical for human health and nutrition, as well as cause human disease. Furthermore, microbes are important experimental systems to study cell physiology, photosynthesis, ecology, evolution, genetics, biotechnology, biochemistry, and human health, reaching into many areas of biology.

The microbiology concentration provides preparation for graduate study in many areas of biological science, as well as professional study in medical, dental, or veterinary school. Graduates with a BS degree may pursue careers in medicine, environmental or food safety, biotechnology, or work as technicians in university, hospital, government, or industrial research laboratories.

GENERAL BIOLOGY COURSE REQUIREMENTS FOR THE BIOLOGY BS DEGREE

- 1. BIOL 2000 Molecules and Cells**
- 2. BIOL 2010 Ecology and Evolution**
- 3. BIOL 2040 Investigations in Molecular Cell Biology**
- 4. Category A: Genetics and Genomics. Choose one course from the following**
 - BIOL 3050 Genetics
 - BIOL 3150 Introduction to Genomics
 - BIOL 3060 Introduction to Genetics (summer only)
- 5. Category B: Physiology and Organismal Biology. Choose one course from the following**
 - BIOL 3030 Introduction to Physiology
 - BIOL 3210 Plant Biology
 - BIOL 4110 Ornithology
 - BIOL 4330 Human Physiology
 - BIOL 4450 Behavioral Ecology
- 6. One Advanced Experience course (see current listing on the Biology Checklist)**

ADDITIONAL COURSE REQUIREMENTS TO COMPLETE A CONCENTRATION IN MICROBIOLOGY

- 1. BIOL 3090 Foundations of Microbiology or BIOL 4140 Microbiology**
- 2. Choose FOUR courses from the following list:**

BIOL 4090 Virology	BIOL 4810 Research in Molecular Microbiology
BIOL 4060 Research in Microbial Ecology	BIOL 4870 Research in Molecular Genetics
BIOL 4350 Biological Chemistry or	BIOL 5060 Recombinant DNA Technology
CHEM 4461 Biochemistry I	BIOL 5071 Microbial Community Ecology
BIOL 4380 Research in Molecular Biology	BIOL 5100 Microbiome and Human Disease
BIOL 4440 Vaccination and Immunity	BIOL 5150 Vaccine Development & Public Health
BIOL 4570 Principles of Immunology	BIOL 5230 Immunity and Infectious Disease
	BIOL 5460 Topics in Microbial Pathogenesis

See the following faculty for advice about course selection and/or post-graduate research in this concentration:

Emrah Altindis
Kathy Dunn
Ismael Ben Fofana
Marc-Jan Gubbels

Charlie Hoffman
Welkin Johnson
Michelle Meyer

Babak Momeni
Heather Olins
Kenneth Williams