

**BIOLOGY DEPARTMENT JUNIOR SEMINARS
2017-2018 ACADEMIC YEAR**

FALL 2017

Bio 580 01: Plant-Microbe Interactions (Dr. Catharina Coenen)

An examination of the interactions between plants and microorganisms focusing on the molecular physiology of signal exchange in plant-microbial symbioses. Laboratory investigations emphasize the modification of plant development by microbial symbionts and provide opportunities to work with genetic model systems and reporter gene analysis. One laboratory per week. *Recommended: Biology 360, 310, or 305.*

**MW 11:00-12:15, Steffee B103
T 1:30-4:20, Steffee B212**

Bio 580 02: Physiology of Vision (Dr. Christy Donmoyer)

An examination of vision in a variety of animals focusing on retinal function. In laboratory we will dissect sheep eyes and use mouse models. We will learn molecular biological techniques related to gene expression. This seminar has a community engagement component involving blind or visually impaired community members; one laboratory per week.

**TTH 9:30-10:45, Steffee B201
W 1:30-4:20, Steffee B201**

Bio 580 03: Genetic Analysis (Dr. Brad Hersh)

A study of genetic approaches to the investigation of complex biological processes including animal development, behavior, and disease. We will consider model genetic systems such as the fruit fly, *Drosophila melanogaster*, and how these models can be used to analyze human genetic disorders. The laboratory will involve experience with molecular biological methods, techniques of both forward and reverse genetics (e.g., mutagenesis, RNA interference), and molecular mapping of traits. One laboratory per week.

**TTH 9:30-10:45, Steffee B103
TH 1:30-4:20, Steffee B316**

Bio 580 04: Aquatic Ecology (Dr. Scott Wissinger)

An examination of the structure and function of local aquatic environments and interactions with surrounding watersheds. The laboratory emphasizes field study of human impacts on ecological processes in local streams and/or wetland ecosystems.

**TTH 9:30-10:45, Steffee B102
TH 1:30-4:20, Steffee B112**

SPRING 2018

Bio 580 01: Sensory Neurobiology (Dr. Lee Coates)

An examination of the structure and function of the sensory systems of invertebrates and vertebrates with emphasis on mechanisms at the cellular level. The laboratory provides experience in electrophysiological techniques and computer simulations as they are used to illustrate the function of neurons and sensory organs in a wide variety of experimental animals. One laboratory per week.

TTH 9:30-12:15, Steffee B302

Bio 580 02: Pathogenic Bacteriology (Dr. Tricia Humphreys)

An exploration of bacterial pathogens and how they cause disease. Students will learn principles of pathogenic microbiology, including where disease-causing organisms come from, how they are transmitted to a host, what factors they use to cause damage to the host and perpetuate their own survival, how the disease is treated, and how transmission can be prevented. The laboratory will focus on factors contributing to virulence using standard microbiology and molecular biology techniques. One laboratory per week. *Recommended: Biology 305, 310, or Chemistry 253.*

TTH 9:30-10:45, Steffee B201

W 1:30-4:20, Steffee B208

Bio 580 03: Signal Transduction (Dr. Margaret Nelson)

An examination of the central role played by signal transduction pathways in the process of cellular differentiation. Particular emphasis will be placed on evolutionarily conserved pathways involved in development in a wide range of organisms, including examples of signaling defects implicated in cancer and other human disorders. The laboratory includes experience in tissue culture, histochemical staining, and fluorescence imaging techniques. One laboratory per week. *Recommended: Biology 305, 320, or 325.*

TTH 11:00-12:15, Steffee B103

TH 1:30-4:20, Steffee B212

Bio 580 04: Disease Ecology (Dr. Matt Venesky)

This course will explore host-parasite interactions and will highlight the diverse ecological and evolutionary outcomes of these interactions, as well as the physiological responses hosts utilize when exposed to parasites. Students will examine classic and contemporary topics in the primary literature on disease ecology, including costs of host defenses, the evolution of parasite virulence, parasite co-infections, how the environment mediates the outcome of host-parasite, and the effects of host-parasite interactions on ecosystems. The laboratory will teach students modern ecological, molecular, and physiological techniques and approaches to studying parasitism in an ecological context. One laboratory per week.

MWF 11:00-11:50, Steffee B201

TH 1:30-4:20, Steffee B112