There are five 3-credit graduate seminars (Biology 8250) offered in the Fall, 2018 semester.

**Seminar - 5460 - BIOL 8250 - 001**
During this graduate seminar, we will explore how humans impact biodiversity and ecosystem functioning through the lens of response and effect traits. Human activities filter for species based on their response traits. In turn, the effect traits of these remaining species dictate the strength of ecosystem functioning. When response and effect traits are tightly correlated, ecosystem functioning can decline precipitously, yet the ubiquity of tightly correlated response and effect traits is not well known. Together we will synthesize from the literature correlations between response and effect traits and the mechanisms by which human impacts alter biodiversity and ecosystem functioning. (3 Credits)

**Credit Hours: 3.000**
Scheduled Meeting Times Type | Time    | Days | Where       | Date Range   | Schedule Type | Instructors
--- | --- | --- | --- | --- | --- | ---
Class | 4:00 pm - 6:30 pm | W | Biology - Life Science 00342 | Aug 27, 2018 - Dec 19, 2018 | Base Lecture | Jocelyn Behm

**Seminar - 38767 - BIOL 8250 - 002**
This course will present students with a series of challenging and topical modules in bioinformatics from genome assembly to structural genomics to systems evolutionary biology. Each module will be two weeks long and will be taught by a different faculty member. A module will typically comprise of a combination of paper discussions and practical exercises. As a team-taught course, the modules will allow students to experience the breadth of the field, the state of the art, and both empirical and theoretical frameworks that are commonly used in bioinformatics.

**Credit Hours: 3.000**
Scheduled Meeting Times Type | Time | Days | Where | Date Range | Schedule Type | Instructors
--- | --- | --- | --- | --- | --- | ---
Seminar | TBA | TBA | Aug 27, 2018 - Dec 19, 2018 | Base Lecture | Rob Kulathinal

**Seminar - 38785 - BIOL 8250 - 003**
The course will expose senior graduate students to the cutting-edge super-resolution light microscopy techniques. Since stated by Ernst Abbe in 1873, the resolution of conventional light microscopy has been believed to be limited at approximately 200 nm due to light diffraction. Currently, super-resolution techniques break this limitation and allow the capture of dynamic images with sub-diffraction resolution. The techniques generally fall into two broad categories: optics-based super-resolution techniques, which generate sub-diffraction illumination volume due to nonlinear optical response of fluorophores in samples, and algorithm-based super-resolution techniques, which utilize mathematical functions to localize the centroids of fluorophores and then reconstitute these centroids to form super-resolution images. By reading through selected high-profile journal papers, students will learn how to utilize the super-resolution microscopy techniques to solve challenging biological and biomedical questions. **Prerequisite: GPA > 3.2 and lab research experience > 2 years**

**Credit Hours: 3.000**
Scheduled Meeting Times Type | Time | Days | Where | Date Range | Schedule Type | Instructors
--- | --- | --- | --- | --- | --- | ---
Seminar | TBA | TBA | Aug 27, 2018 - Dec 19, 2018 | Base Lecture | Weidong Yang
This graduate seminar will seek to explore the physiological functions of ion channels in nervous system excitability. We will discuss ion channel structure, molecular mechanisms of operation, and their respective contribution to membrane excitability. Over the course of the semester students will gain a fundamental understanding of ion channel function through class discussions and presentations.

**Population Genetic Inference**

In this seminar we will work through a series of papers describing important innovations in population genetic inference through the years, starting with Ewens Sampling Formula and ending with modern SNP and haplotype-based techniques. We will focus on reading both the original methods description and looking at state-of-the-art application of the methods in both model and non-model systems. This seminar is appropriate for any students with an interest in applying population genetics inference in their research, and will assume extremely minimal background knowledge of the topic.