## EEBL - ECOLOGY & EVOL BIOLOGY

#### EEBL 600/ECCB 600 Populations, Communities, and Ecosystems

**Credits 3. 3 Lecture Hours.** Basic principles and methodologies of ecology and preparation for pursuit of advanced study in subfields such as population biology, community ecology, evolutionary ecology and ecosystem science; emphasis on population, community and ecosystem processes that also have significance and influence at landscape, regional and global scales as well as proximate to evolutionary time scales; basic principles of ecology that are critical to biological conservation and sustainable use of ecosystems and renewable natural resources. **Prerequisites:** Graduate classification. **Cross Listing:** ECCB 600/EEBL 600.

## EEBL 601 Physiological Ecology

**Credit 1. 1 Lecture Hour.** Examination of how physiological systems respond, over different timescales, to variation in physical and biological environments; understanding how the interaction of organism and environment determines characteristics relevant to ecology; understanding the effect of individual characteristic on population and interspecific dynamics. **Prerequisite:** Graduate classification.

### **EEBL 602 Population Ecology**

**Credit 1. 1 Lecture Hour.** Fundamental concepts in population dynamics; focus on birth, death, immigration and emigration processes; how processes are affected by internal factors and ways they affect population abundance. **Prerequisite:** Graduate classification.

## EEBL 603 Community Ecology

**Credit 1. 1 Lecture Hour.** Fundamental concepts in community ecology; conceptual development of the sub-discipline; spatial and temporal patterns of community structure; processes that determine community structure and dynamics; interface of population, community and ecosystem ecology; applications of community ecology for natural resource management, agriculture and health **Prerequisite:** Graduate classification.

## EEBL 604 Ecosystem Ecology

**Credit 1. 1 Lecture Hour.** Examination of flow of materials, energy and information between ecosystems and the geographic structure in which ecosystems are embedded globally; integrative nature of spatial and temporal processes acting across ecosystem units. **Prerequisite:** Graduate classification.

## EEBL 605 Population and Quantitative Genetics

**Credit 1. 1 Lecture Hour.** Basic overview of the fields of population and quantitative genetics; fundamental concepts and their applications in research of natural populations. **Prerequisite:** Graduate classification.

# EEBL 606 Phylogenetics and Comparative Biology

**Credit 1. 1 Lecture Hour.** Examination of phylogenetics and comparative biology. **Prerequisite:** Graduate classification.

## **EEBL 607 Evolutionary Genomics**

**Credit 1. 1 Lecture Hour.** New techniques for generating large amounts of genetic data, including thousands of single-nucleotide polymorphisms and whole-genome sequence data; transforming the study of evolutionary biology and the interpretation of evolutionary phenomena; includes population genetics, adaptation, phylogenomics and speciation. **Prerequisite:** Graduate classification.

#### **EEBL 608 Integrative Animal Behavior**

**Credit 1. 1 Lecture Hour.** Examination of the contributions of behavior to survival and reproduction; the interaction of evolutionary history and ecological circumstance to shape the expression of behavior; integrative nature of behavior; interaction of evolutionary processes, mechanistic constraints and ecological demands involved in selecting for a set of behavioral strategies. **Prerequisite:** Graduate classification.

#### **EEBL 610 First Year Graduate Seminar**

**Credit 1. 1 Lecture Hour.** Attendance and active participation in the weekly dinnertime conversation on PhD and career planning with ecology and evolutionary biology core faculty and others; faculty and colleagues provide feedback on application for fellowship support. **Prerequisite:** Graduate classification.

## EEBL 612 Open Source for Open Science Bootcamp

**Credit 1. 1 Lecture Hour.** Exposure to command line programming in R; principles of data import, vetting, processing, analysis, graphing and produce export; bootcamp precedes Fall semesters over a three-day period. **Prerequisite:** Graduate classification or approval by instructor.

## **EEBL 645 Ecological Genomics**

**Credits 3. 3 Lecture Hours.** Ecological genomics toolkit including genetic maps, genotyping, RAD-sequencing, whole-genome assembly and resequencing, RNA-sequencing analyses; genomics of adaptation; speciation genomics; speciation genomics; conservation genomics; genomics and life history traits; phylogenomics; climate change and genomics. **Prerequisites:** GENE 301, GENE 302, GENE 310 or GENE 412, or approval of instructor. **Cross Listing:** ECCB 645 and GENE 645.

#### **EEBL 676 Speciation Genetics**

**Credits 3. 3 Lecture Hours.** Introduction to the ability to speciate into biologically diverse forms via microevolutionary processes; literature on the origin of species beginning with Darwin and continuing through contemporary work; overview of several major topics in speciation with special emphasis on the genetics of speciation in this genomic era. **Prerequisites:** GENE 603 and BIOL 610 or BIOL 466, or equivalent. **Cross Listing:** VIBS 676 and GENE 676.

#### EEBL 681 Seminar

**Credit 1. 1 Lecture Hour.** Attendance and active participation in the weekly ecology and evolutionary biology colloquium featuring guest speakers invited by students and faculty. May be taken up to six hours for credit. **Prerequisite:** Graduate classification.

#### EEBL 689 Special Topics in...

**Credits 1 to 4. 1 to 4 Lecture Hours.** Selected topics in an identified area of ecology and evolutionary biology. **Prerequisite:** Graduate classification.