EE graduate group upcoming courses and reading groups

Ongoing reading groups and seminars

These are offered every semester. Register when you can, but you do not need to register to attend any of these. Some of these are lab group meetings that are open to attenders from other labs.

- Seminar in Ecology and Evolutionary Biology (PCB 6938-0001, 2 credits, S/U, Instructor for 2016/2017 – M’Gonigle). Friday 4:00-5:00. This is the weekly EE seminar series.

- Colloquium (BSC 6921 0001, 1 credit, S/U, Instructor – Underwood). Thursday 4:00-5:00. This is the weekly departmental seminar series, which includes talks on work from across all biological disciplines.

- Ecology Reading Group (BSC 5932 – 53, 1 credit, S/U, Instructor for fall 2017/spring 2018 – Miller, along with other faculty). Friday 9:30-10:30.

- Marine Ecology and Evolution Reading Group (BSC 5932-0004, 1 credit, S/U, Instructor - Burgess)

- Macroevolution Reading Group (BSC 5932-39, 1 credit, S/U, Instructor – Steppan). Fridays, typically starting at 12:00 but time can be adjusted plus/minus 30 minutes depending on the schedules of the attendees.

- (on hiatus fall 2017/spring 2018) Plant-Insect Interactions Reading Group (BSC 5932-45, 1 credit, S/U, Instructor – Underwood. This is the Underwood and Inouye lab group; all are welcome).

- Ecological Genetics Reading Group (BSC 5932-43, 1 credit, S/U, Instructor – Travis, this is the Travis lab group; all are welcome. Meets Thursdays 1:30-3:00)

- Behavior Lunch (1 credit, S/U, Instructor – TBA, folks from labs across EE, Neuro and Psychology attend)

- Speciation Discussion (1 credit, S/U, Instructor – E. Lemmon, this is the Lemmon lab group).

- Evolution Discussion Group (BSC 5932-20, 1 credit, S/U, organized by Ellen Kosman and David Houle). Contact etkosman@bio.fsu.edu to participate.

- Evolutionary Morphology (BSC 5932-13, 1 credit, S/U, Instructor – Erickson)
• Units of Selection Reading/Discussion Group (i.e., all aspects of multi-level evolution, ranging from evolution of eukaryotic cells; evolution of multi-cellular life at the base of the animal, plant, and fungi trees of life; social insects and other social groups; symbiotic associations, including mutualisms of all types). This is the Wulff lab group, but we enthusiastically welcome anyone who would like to explore aspects of evolution that involve questions about units of selection. If interested, contact Dr. Wulff.

• (on hiatus fall 2017/spring 2018) Writing in Biology (also known as “Writing Club”, BSC 5932-52, 1 credit, S/U, Instructor – Underwood). Wednesday 9:00-11:00. We meet, we write, sometimes we talk about strategies for getting writing done.

• Ecological, Evolutionary, and Behavior Genetics Reading Group (BSC 5932-22, 1 credit, S/U, Instructor - Hughes, this is the Hughes lab meeting, but all interested students are welcome). Time: TBA

• Green Group botany discussion group (BOT 6936-01, participating faculty: Bass, Bates, Cui, Jones, McCoy, McGinnis).

Courses and one-off seminars

Some courses are on a regular rotation (e.g. every other fall), others are irregular.

Fall 2017

• Population Ecology (PCB 5425, 3 credits, graded, Instructor – Travis). This course examines the factors that affect the dynamics of where populations are found (distribution) and the numbers of individuals in those populations (abundance). Topics include basic numerical dynamics, population regulation and its detection, complex numerical dynamics, the consequences for numerical dynamics and stability when vital rates are structured by age, developmental stage, or an underlying continuous trait like body size, basic stochastic effects on dynamics, and the spatial structure of numerical dynamics (e.g. metapopulations, sources and sinks). Lectures cover the concepts as reflected in mathematical models of dynamics and class discussions focus on the empirical literature, from case studies of individual populations to reviews and meta-analyses of broad patterns. Coverage of additional topics like detection probabilities, use of mark-recapture methods, or evolutionary dynamics (including adaptive dynamic models) depends on student interest.

• Quantitative Methods (BSC 5936-01, 4 credits, graded, Instructor - Burgess). This course covers the fundamental concepts and methods of experimental design and statistical data analyses, using the R software, as they are employed in ecology and evolutionary biology.
• Field Quantitative Methods (BSC 5936023, 1 credit, graded, Instructor – Miller). We hope all new graduate students in Ecology and Evolution will take this one credit field course that consists of four weekend field trips to different beautiful and interesting local habitats. This course is loosely associated with the regular Quantitative Methods lecture course, as students will design and complete group experiments on each field trip, the data from which will be used in the regular QM course. The course has several other objectives, including exposing new students to a variety of habitats in north Florida, introducing a broader set of faculty, and bringing new graduate students together as a cohort through “shared miserable field experiences”.

Spring 2018

• Macroevolution (PCB 5682, Instructor – Steppan). Evolutionary biology and ecology are increasingly being integrated across process scales. In particular macroevolutionary approaches like phylogenetics are applied to questions about organisms, adaptations, and microevolutionary phenomena whereas microevolutionary approaches are providing greater insight into macroevolutionary patterns. Therefore, this class will provide a foundation in macroevolution (evolution at the species-level and above) applicable to the research and conversability of graduate students in E&E. The focus will be two-fold: 1) survey the primary concepts of modern macroevolution with a focus on phylogenetic inference and historical perspectives on extant variation, 2) facilitate competency in many of the common tools and applications of macroevolution, including phylogenetics (using morphological and molecular data), the comparative method, biogeography, testing adaptation, quantifying trends in diversification, and molecular clock dating. Together, students should leave the class being able to look at their own work in new ways, ask sophisticated questions that use — at least in part — macroevolutionary or phylogenetic approaches, the ability to understand and evaluate macroevolutionary approaches in the literature, and the ability to apply such tools to any project of their interest. Students should also be conversant in macroevolutionary concepts as would be expected of a faculty member in ecology and evolution.

• Scientific Teaching (3 credits, graded, Instructor – Granger). If you are interested, contact Ellen Granger. This course is generally taught every other spring.

• Environmental Ecophysiology (3 credits, graded, advanced undergraduate and graduate course, instructor – McCoy)

• Advanced Evolution (PCB 5675 01, 3 credits, graded, Instructor – Houle)

Fall 2018
• Quantitative Methods (BSC 5936-01, 4 credits, graded, Instructor - Burgess). This course covers the fundamental concepts and methods of experimental design and statistical data analyses, using the R software, as they are employed in ecology and evolutionary biology.

• Field Quantitative Methods (BSC 5936023, 1 credit, graded, Instructor – Miller). We hope all new graduate students in Ecology and Evolution will take this one credit field course that consists of four weekend field trips to different beautiful and interesting local habitats. This course is loosely associated with the regular Quantitative Methods lecture course, as students will design and complete group experiments on each field trip, the data from which will be used in the regular QM course. The course has several other objectives, including exposing new students to a variety of habitats in north Florida, introducing a broader set of faculty, and bringing new graduate students together as a cohort through “shared miserable field experiences”.

• Ecological Genetics (PCB 5615, 3 credits, graded, Instructor – Hughes) This course covers the fundamentals of modern ecological genetics. The course begins with an overview of genetic variation, its measurement, and the forces responsible for the origin and maintenance of variation within and among populations. The remainder of the course describes the ecological context of evolution, and the ecological and evolutionary forces that shape variation within and between populations. Emphasis will be placed on experimental studies of natural populations, and the relationship between theory and experiments. Several advanced topics will be covered in the second part of the course: life-history evolution, sexual selection, applied ecological genetics, and molecular evolution. Students in the course will choose some of the advanced topics. Readings from the textbooks will be supplemented with considerable reading and discussion of the primary literature.

• Biomathematics (BSC 5936-03, 3 credits, graded, Instructor – M’Gonigle, note this is an undergraduate course that can also be taken for graduate credit). In this course, we will learn how to develop and analyze simple mathematical models in biology. The focus is on ecological and evolutionary models, however, we will also cover other topics (e.g., demography and epidemiology) and the skills learned are transferable to a much wider array of topics than just those covered. By the end of the course, students should be familiar and comfortable with the types of models that they will encounter in the primary literature. Math prerequisites are minimal (first year calculus), as we will cover the majority of what is needed in class.

• Biogeography (BSC 5936-05, 4 credits, graded, Instructor – Steppan, taught even numbered fall semesters). Biogeography is the study of the distributions of animals and plants (all organisms) in space and time and the processes that determine those distributions. As the name implies, this field combines elements of biology (especially ecology and evolution) and geography. The distributions
are determined by the physical characteristics of organisms, how these
characteristics interact with the physical and biotic environment, and by history.
The field can be explored by looking at entire ecosystems, physiology of
individual species, or evolutionary history of groups of species, among other
approaches. This course will cover the full range of biogeography with an
emphasis on ecological and evolutionary biogeography, the processes that help
determine distributions, and the analytical methods used to describe distributions
and test processes. Topics include the physical environment (geology,
meteorology), the distribution of ecosystems and biomes across the globe,
speciation, common geographic patterns, diversity gradients, island
biogeography, and historical (evolutionary) biogeography. There is a laboratory
section as part of this course in which student working in groups will analyze
geographic data sets to search for patterns and test hypotheses with the
scientific method. This class qualifies for the departmental lab requirement.

Spring 2019

- Community Ecology (PCB 5447, 3 credits, graded, Instructor – Miller). This is a
  graduate-level course that includes lectures, exercises, and exposure to the
  primarily literature. The course begins with a short history, then moves on to
discuss community patterns, species interactions (competition, predation,
mutualisms), indirect effects, disturbance and succession, metacommunities, and
landscape ecology. The course ends by looking at unanswered questions in
community ecology, as well as current concepts such as invasive species and
climate change, and possible future directions for the field. This course requires
a strong background in general ecology and will utilize experiments, theory, and
models.

Courses in other grad areas and departments that might be of interest

It is hard to keep up with all relevant courses so I won’t attempt to list them all here, but
bear in mind that there are courses that may be of interest in Cell/Molecular Bio,
Neurobio, Scientific Computing, EOAS, Math, Statistics, Science Education and other
departments. Talk with the EE faculty about how to find courses you want or need.

Ongoing courses (every fall and spring semester):

1. Writing in the Sciences (ENC 5457, 3 credits, S/U, Instructor – Hellstrom,
workshop style class for students with a writing project in progress. Not for first
year students. Through the English department.)

2. Scientific Presentations and Posters (COM 5115, 3 credits, S/U, Instructor –
Hellstrom, through the College of Medicine).

3. Science Education Reading Group (College of Education, Instructor – Calusell
Mathis, contact instructor if interested in joining)
4. Short (2-7 days) summer **teaching workshops** through Science Education. There is no charge and different ones carry different amounts of course credit (one to two credits). Contact Ellen Granger to find out more about these. Example workshops that are usually taught are:

- Developing Scientific Explanations in the Classroom (2.5 days)
- Scientific Argumentation in the Classroom (3 days)
- Teaching the Nature and Practices of Science (10 days)
- Communicating Science: The Pedagogy of Teaching Science (5 days)
- Teaching Climate Science and Data Literacy (7 days)
- Lesson Study in the Science Classroom (4 days)
- Teaching about and with Scientific Models (Models Based Inquiry) (3 days)

**Future courses, unscheduled at the moment, but if you want to see them taught feel free to ask!**

- Ecology and Evolution of Plant-Insect Interactions (BSC 5936-0004, 3 credits graded or 1 credit ungraded (talk to instructor about this option), Instructor – Underwood). Plants and the insects that feed on them constitute a huge proportion of the diversity on the planet. Interactions between plants and insects are fundamental to natural systems and agricultural systems, and many classic studies in ecology and evolutionary biology focus on these interactions. This course will explore areas of active research on plant-insect interactions from both ecological and evolutionary perspectives. The emphasis is on learning the history of research in each area, identifying current open questions and figuring out how they might be answered. We will use reading and discussion of primary literature and writing to explore topics such as herbivorous insect population dynamics and community ecology, coevolution, evolution of plant defenses and insect host range, mutualisms, etc.