



Duke-OTS Undergraduate Study Abroad Program Fundamentals of Tropical Biology

Duke University BIO280LA

This course integrates classroom and field instruction to introduce students to the fundamental principles of tropical biology, the natural history of local ecosystems, and field methods for biological studies. Natural, tropical ecosystems are used as the platform to develop hypotheses, methods, analyze data and present scientific projects in PowerPoint format. Classroom instruction includes lectures given by coordinators and visiting professors, as well as discussions of assigned readings and selections from the primary literature.

Fieldwork is an important component of the course. During summer, the course visits three OTS biological field stations (La Selva, Las Cruces, and Palo Verde) as well as additional sites chosen to highlight the climatic and biotic diversity of Costa Rica. Students are thus introduced to a great variety of habitats, including several dramatically different types of forest (e.g., montane cloud, seasonally dry and lowland wet forests). Field orientation at each site includes the identification and natural history of important plant and animal species. These activities also serve to stimulate questions that students may address in subsequent independent research projects.

Specific Goals:

By the end of this course, students will be able to:

- Distinguish among diverse tropical ecosystems and identify the key characteristics of lowland wet forest, dry forest, major wetland ecosystems and montane forest.
- Understand the basic natural history of important plant and animal taxa in Costa Rica, and identify important plant and animal groups associated with each of the major ecosystems visited.
- Have the ability to discuss and develop original research projects based on natural history observations with emphasis on ecology, behavior and key conservation issues in tropical ecosystems.
- Present research to peers and professional biologists in PowerPoint and scientific writing formats

Grading:

Grades in this course are based on field projects, written assignments, field notebook, and participation. Class participation is based on attendance, completion of assignments, positive contributions to discussions and lectures, ability to work well with peers, and demonstration of academic initiative and enthusiasm in the field as well as in the classroom.

	% Final Grade
Fieldwork and data analysis	10
Written Assignments	15
Oral presentations	30
Participation	5
Research Talk Readings	10
Independent Project	30

Fieldwork and Data Analysis:

Students will be conducting short field projects directed by a professor. Participation in fieldwork as well as discussion and analysis of the research projects provides students with an opportunity to learn and participate in a group setting before beginning their independent projects.

Written Assignments:

Students will be conducting several short field projects directed by course and invited professors. Write-ups of these field projects will be evaluated to provide students with an opportunity to learn about scientific writing and data analysis before working on their independent projects. Research projects will be written in scientific journal format.

Oral Presentations:

Students will give oral presentations of their field projects conducted under the guidance of course and invited professors. Following data collection and analysis, groups will present their project to their peers using poster format or oral presentation with PowerPoint slides with a scientific meeting style format.

Participation:

Students will participate in orientation walks at each field site, attend lectures by invited research faculty and in-house research faculty, engage in group discussions of scientific readings, and contribute to discussions of topical relevance. Students are expected to attend and actively participate in each activity.

Research Talks and Readings:

Students will be exposed to research talks by faculty who will assign scientific papers based on different research topics. Students are expected to read, understand and interpret primary literature.

Independent Project:

A field research project will be conducted at the end of the course independently by students. These projects may be individual or in pairs, and will not be directed (but advised) by faculty. Students will have an opportunity to explore a question of their interest, develop an experimental design to evaluate it, collect data, analyze their findings and write up a short report in the format of a scientific paper. Students are encouraged to check journals such as *Biotropica* for examples before the course, but time will also be provided for students to get familiar with scientific writing.

Instructors:

Course Coordinator: Ph. D. Scott Walter

Textbooks:

Course Reader with articles assigned throughout the course (*Seminar Series*)

Course Schedule*:

Site	Topics and Activities
San José	Introduction to the program. Visit the OTS office and INBIO.
Las Cruces	Conservation biology; Forest fragmentation, and restoration programs; Plant workshop
Las Alturas	Fauna and flora of tropical cloud forest Bat ecology and diversity Plant ecology in high elevation forests Experimental design and statistics Group Field project 1
La Selva	Concepts and importance of biodiversity; Origins and maintenance of biodiversity Introduction to lowland tropical forests Mammals, herps, birds, insects and plants of the lowland tropics Continuation of experimental design and statistics Group Field project 2
San Carlos	Break
Palo Verde	Introduction to dry forest and wetland dynamics Plant-animal interactions: Mutualisms, antagonisms and coevolution Birds, insects, and herps of the dry forest Aquatic Entomology Independent Project Presentation (Individual)
San Jose	Course Wrap-up Departure Course evaluation (end of week)

**The above schedule of site visits is subject to change. If you would like an up-to-date program itinerary, please contact the Administrative Assistant, Kattia Mendez after May 15, 2017.*