Tropical Ecology  
BSC2362
Study Abroad Honduras - Summer 2018

Professor: Dr. James A. Wallis  
Phone: 727.712.5403  
Campus: Tarpon Springs  
Email: wallis.jim@spcollege.edu  
Credits 3, Contact Hours 47

Course Description:
This is a lower division course designed to evaluate the uniqueness of increasingly threatened tropical forests. Emphasis will be on the New World tropics, including dry, moist, and wet forests. The course is organized into three major parts. A third of the course emphasizes abiotic features that give rise to tropical forests, their physical structure, and gap dynamics. Another third focuses on plant/animal interactions critical to the functioning of tropical communities. The final third examines the social, economic, and political issues affecting tropical forest use, conservation, and management. One major goal of the course is to make students aware of the importance of tropical forests, how they affect the lives of North Americans, and the global consequences of tropical deforestation. A second major goal is to improve the student’s ability to clearly articulate scientific arguments in writing, to be able to find pertinent, up-to-date data, and to critically evaluate original scientific literature.

This course will introduce you to the major ecosystems of the world's tropical regions, the fundamental ecological principles at work in these systems, the current threats facing each major ecosystem and the prominent conservation approaches for countering these threats. Specific topics are detailed in the schedule below. The course opens with an introduction to the tropics, where tropical habitats are located, and the climatic conditions that maintain them and some of the ecological processes most important in the tropics. We then transition to a series of discussions dedicated to the major ecosystem formations in the tropics. We will study the worldwide distribution, characteristic flora and fauna, and most pressing conservation issues relevant to each ecosystem.

Study Abroad Application Requirements:

Approval for participation in the program is subject to the following. Each participant must:

- Be a college student with a high school diploma, to participate in a traditional Study Abroad program or be registered as dual enrolled (*) to participate in a high school Study Abroad program.
- Be in good academic standing at the time of application (cannot be on academic warning, probation or suspension).
- Be enrolled for credit in an approved Study Abroad program course.
- Meet with an academic advisor to
  - Ensure any or all prerequisites needed to enroll in the course have been met
  - To complete a My Learning Plan
- Submit all required forms and documentation
- Interview with and be approved by program’s lead faculty member.
- Be approved by the Center for International Programs.
COURSE OBJECTIVES:
Major Learning Outcomes:

1. The student will understand the ecological and evolutionary forces that shape tropical ecosystems.

2. The student will demonstrate an understanding of common native plants and animals found in a Neotropical country.

3. The student will understand the scientific methodology and research as it relates to the study of tropical/related systems and organisms associated with them.

4. The student will understand the anthropogenic influences on tropical systems.

C. Course Objectives Stated in Performance Terms:

1. The student will understand the ecological and evolutionary forces that shape tropical ecosystems by:
   a. describing the abiotic factors that influence organisms and the adaptations necessary to tolerate various environmental conditions.
   b. delineating biotic factors that determine the distribution and abundance of tropical plants and animals.
   c. identifying selected tropical ecosystems and explaining how they are formed and maintained.

2. The student will demonstrate an understanding of common native plants and animals found in a Neotropical country by:
   a. describing the classification hierarchy for selected tropical species.
   b. participating in field observations of typical tropical groups including:
      1. epiphytes such as orchids, bromeliads, ferns, palms and cacti.
      2. insects such as scarab beetles, pollinators and morpho butterflies.
      3. amphibians and reptiles such as tree frogs, poison dart frogs, boa constrictors and mimetic forms.
      4. birds such as toucans, parrots, flycatchers, and hummingbirds.
      5. mammals such as monkeys, bats, agoutis and coatis.
      6. native plant species such as Ceropia, Walking Palms, Strangler Figs, and various species of tropical plants.
   c. observing population interactions including commensalism, predation, parasitism, competition, and mutualism.
3. The student will understand the scientific methodology and research as it relates to
the study of tropical/related systems and organisms associated with them by:

   a. preparing field notes.
   b. assessing scientific information and writing a research paper.
   c. conducting field observations, research, or analysis.
   d. comparing disturbed and undisturbed habitats.
   e. describing the impacts of agricultural systems

4. The student will understand the anthropogenic influences on tropical systems by:

   a. observing altered sites within tropical systems in comparison to undisturbed
      sites.
   b. measuring levels of diversity changes within and between sites in comparison
      to standard levels of expected diversity.
   c. describing the effects of human encroachment on tropical systems.

D. Criteria Performance Standard:

Upon successful completion of the course the student will, with a minimum of 70% accuracy,
demonstrate mastery of each of the above stated objectives through classroom measures
developed by individual course instructors.

Specific Topics (not all inclusive)

- Climate of the neotropics
- Nutrient cycling
- Forest structure
- Gap phase regeneration
- Maintenance of plant diversity
- Forest animals
- Species diversity – Hypotheses
- Seasonal rhythms in flowering, fruiting, germination
- Pollination systems
- Herbivory – impact on plant defenses
- Seed dispersal and seed predation
- Forest animals
Subject Matter Expert:

You will become an expert in one area of the tropics. You are to select and thoroughly research an approved topic related to the tropics of Honduras. You will be our group “expert” on this subject. You will develop a 45 minute presentation for the group on your subject to present while in Honduras. You may select your presentation media (Power Point, Word, etc.) and develop a presentation for the group. Computers will be available while in Honduras. You also will serve as the expert whenever your topic comes up and answer questions related to this topic. To get ideas for a topic, peruse the general books on reserve and recent issues of Ecology, Biotropica, Journal of Tropical Ecology, Oecologia, and Trends in Ecology and Evolution. An outline of the presentation and a first draft are required before the trip. No assignments will be taken after the given deadline. You must be ready to present at any time while in Honduras, since topic presentation will be decided by events that occur on the trip. NO CREDIT WILL BE GIVEN FOR PLAGIARIZED WORK (i.e., taking credit for the work of others, whether the work that of another student, or the work of a published author).

Field Work = 20%
Content Testing = 20%
Presentations (in Honduras)= 40%
Journals = 20%

Potential Topics for Class

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<tr>
<th>Topic</th>
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<tr>
<td>Geography of the Tropics</td>
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<td>Geology of the Tropics</td>
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<td>Early Explorations</td>
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<td>Quantifying Diversity</td>
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<td>Patterns of Tropical Diversity</td>
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<td>Divergence and Convergence in the Tropics</td>
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<td>Predation Ecology</td>
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<td>Montane Ecology</td>
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<td>Forest dynamics</td>
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<td>Tropical mammalian ecology</td>
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<td>Tropical amphibian ecology</td>
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Social Insects in the tropics
Mimicry and Defense
Symbioses
Nutrient Cycling
Savannas
Tropical Mountains
Tropical Agriculture
The Tropical Timber Industry
Current Status of the Forests
Conservation Strategies

Schedule

BLD = Breakfast, Lunch, Dinner

Day 1: Sunday 05/06/18 Copan Plaza Copan (D)
Upon arrival in San Pedro Sula your driver will take you to Copán situated in western Honduras in a small valley surrounded by mountains and tropical vegetation. In the evening enjoy a lecture by Prof. David Sedat on the Maya of Copán. Prof. Sedat has been recognized for his work in the underground tombs at the site, and has a lifetime of knowledge of the Maya. Have dinner with a local family of a special needs child and talk about challenges of mental health facilities in rural Honduras.

Day 2: Monday 05/07/18 Copan Plaza Copan (BLD)
Today will be spent exploring Copán Ruins. Copán has some of the finest carvings and architecture of the Maya World and is considered the Athens of the Maya civilization for its advancement in art, written language, and astronomy. Upon arrival explore the well preserved archaeological site of Copán and its museum to learn about the history of the Maya with your guide. Within Copán’s 74,000 acre archaeological park, observe some of best preserved stelae, altars, and ceremonial areas in Honduras. This is the place where the great ancient Maya civilization flourished and is held in high regard among archaeologists for the vast amount of carved text and hieroglyphs found throughout the site. Here numerous archaeologists are working to enhance the restoration of the ruins and learn more about the Maya through the many inscriptions they left behind. Recently excavated underground tunnels revealed another two levels of Maya structures below ground level. You will have time to explore the carved heads of deities, the pyramid temples where kings ruled, the ball court where ancient games were played, the hieroglyphic stairway with its 63 carved steps, and the stone columns and sculptures in the central court.

Day 3: Tuesday 05/08/18 Tela Villas Telamar (BLD)
In the morning depart to the sleepy coastal town of Tela and the seaside Hotel Villas Telamar (approximately four hours). The land where the Villas Telamar is located was built in the first decades of the last century by the Tela Railroad Company, producers of the internationally known brand Chiquita. Here you can experience the story of the Banana
Republic firsthand. The houses were designed to lodge the families of the executives that worked in the railroad company. Its design on top of wooden columns is a typical structure used on houses on the Caribbean coast. After dinner receive an orientation on the different cultures of Honduras.

Day 4: Wednesday 05/09/18 Utila Utila Lodge (BLD)

This morning you will visit an authentic Garifuna village. Most Garifuna housing consists of small huts with walls made of royal palm, sugar cane, and cement blocks, with ceilings made of hay. In 2001, UNESCO proclaimed the language, dance and music of the Garifuna as a Masterpiece of the Oral and Intangible Heritage of Humanity. During your visit you will experience Garifuna culture firsthand. Following your village experience you will visit a local school to learn about everyday classroom life. Later in the afternoon transfer to La Ceiba and catch the ferry to Utila. Arrive at around 5:30 p.m. and head directly to Utila Lodge. Check into Rooms and fill out registration and then have dinner. After dinner, discuss program and schedule. Register for REEF.org Level 1 and then have a Whale Sharks of Utila Presentation - General introduction to the whale sharks, habitat, life cycle, feeding habits, etc.

Day 5: Thursday 05/10/18 Utila Utila Lodge (BLD)

This morning have breakfast at the lodge. Then there will be a talk on ocean reef ecosystems. Start with an introduction to local ocean systems including currents, tides, water temperature, and tropical environment. Also compare and contrast to other world ocean systems. Finally, receive an overview of the underwater topography surrounding Utila and the Bay Islands. Then there will be a theoretical session, Fish ID/REEF Survey: orientation and complete overview of Caribbean island reef fish that will assist you in participating in our REEF.org Survey Project. Two surveys will register you as Level 2 Surveyor. Information will be given on different groups of reef fish including butterfly fish, angel fish, surgeon fish, jacks, baras, porgy, chub, snappers, grunts, damselfish, chromis, hamlets, groupers, sea bass, basslets, parrot fish, wrasse, squirrel fish, big eye cardinal fish benny, goby, jaw fish, flounder scorpion fish, lizard fish frog fish, file fish, trigger fish, puffer fish, trunk fish cow fish goat fish, trumpet fish, drums eels sharks and rays. Have lunch and then begin field session, Fish ID Snorkel Survey Excursion. Board boats and then excursion to a nearby suitable snorkel location along the reef wall. An experienced guide/biologist will snorkel with participants to point out the different fish and help to identify species that they have learned about in the classroom session. Return to the lodge and then late afternoon to debrief participants of what they were able to identify on excursion and enjoy the sunset. This evening have dinner and discuss activities for tomorrow.

Day 6: Friday 05/11/18 Utila Utila Lodge (BLD)

This morning have breakfast and then Lecture: Whale Shark Biology. This lecture will cover whale shark distribution on a regional and global scale, overview of migratory routes ad what this means for conservation. Methods of tracking with emphasis on Photo Tagging. Introduction to Ecoccean Photo Recognition Program. Introduction to plankton sampling and assessment. Then complete review and understanding of Whale Shark Encounter Guidelines and policy as described by WSORC and the Honduran Government. Mid-morning Excursion to the Iguana Station. Learn about the indigenous Iguana to Utila the "Swamper" this Utila Iguana (Ctenosaura bakeri) is a large, tree dwelling black iguana. Have lunch back and the lodge and then this afternoon, Whale Shark Safari/ Cetacean Snorkel Excursion* (3 -4 hrs - snorkel to include REEF Fish survey). Depart by boat in search of Utila's unique marine life with hopes of snorkeling with dolphins, tuna boils, eagle rays, turtles and whale sharks. Late afternoon time to enjoy the sunset followed by dinner and debriefing. Then continue the program with REEF Survey Test / Registration for Level 2. This evening free time for watching for resident underwater creatures that live under the lodge's dock, including eagle rays, needle nose fish, grunts, etc.
Day 7: Saturday 05/12/18 Utila Utila Lodge (BLD)

Have breakfast and then Lecture: Whale Shark Theory. Receive and introduction to the Whale Shark & Oceanic Research Center (WSORC) its current operations, activities and the role of furthering education, information and research in the worldwide arena. Whale Shark biology, research and its value to Ecotourism. Methods of tracking with emphasis on Photo Tagging. Introduction to Ecocean Photo Recognition Program. Genetic sampling theory and how the samples are processed and instruction on Plankton sampling. Brief overview of cetaceans found in the coastal waters surrounding Utila. Midmorning excursion to BICA to learn about their Turtle Project and other programs they facilitate on Utila. Have lunch at the lodge and then this afternoon second Whale Shark Safari/ Cetacean Snorkel Excursion. Have dinner and sunset back and the lodge and then debriefing.

Day 8: Sunday 05/13/18 La Ceiba Lodge at Pico Bonito (BLD)

This morning, bid Utila farewell and take the ferry back to La Ceiba. Upon arrival, transfer to the Lodge at Pico Bonito, situated at the edge of the Pico Bonito National Park. Settle in and then hike through the rainforest to a waterfall for a refreshing swim in the clear pools. After dinner is an orientation to the lodge and Pico Bonito National Park. Pico Bonito National Park is the second largest national park in the country, covering an area of 415 square miles. Its vast size subsequently means that it is one of the most diverse national parks in Honduras.

Day 9: Monday 05/14/18 La Ceiba Lodge at Pico Bonito (BLD)

Early morning birding around lodge. After breakfast, is an exciting whitewater rafting trip on the Cangrejal River. Flowing from deep within the rainforest of the Pico Bonito National Park down to the Caribbean Ocean, the 20 mile river has rapids ranging in difficulty from class II to class IV. In the afternoon take a guided hike into Pico Bonito National Park with a naturalist guide. The main loop trail passes three different canopy observation towers, optimally located for spectacular views and wildlife observation opportunities. The trail meanders along a ridge that divides the Corinto and Coloradito River watersheds and accesses several swimming holes and small waterfalls. Pico Bonito features more than seven different ecosystems across varied altitudes and is home to jaguars, armadillos, wild pigs, tepezcuintles, squirrels, monkeys, toucans, white-tailed deer, mountain lions, river otters, motmots, and many more species.

Day 10: Tuesday 05/15/18 La Ceiba Lodge at Pico Bonito (BLD)

Have breakfast at the lodge and then transfer to a nearby geriatric center in La Ceiba. Program details to be determine based on services needs to assist in the care of seniors making a home here, many abandoned by their families. Evening walk at Pico Bonito to study insects under black lights on the grounds.

Day 11: Wednesday 05/16/18 La Ceiba Lodge at Pico Bonito (BLD)

This morning, optional early morning bird walk along the trails followed by breakfast. Then biology students will travel to Parque Centre and the Psychology students will transfer to La Ceiba to explore health care in Honduras during a visits to local hospitals in La Ceiba. The program details will be honed in closer to arrival date. Lecture by a local Psychologist
and visit to a mental institution. This evening dinner at Pico Bonito and nocturnal walk on hotel grounds.

Day 12: Thursday 05/17/18 La Ceiba Lodge at Pico Bonito (BLD)

Transfer to San Pedro Sula. After lunch in San Pedro Sula visit the Gualilito market.

Day 13: Friday 05/18/18 San Pedro Sula Hotel Copantl (BLD)

This morning after breakfast visit local university and receive lecture, in the afternoon visit geriatric doctor and also visit El Buen Samaritano Center for Psychology.

Day 14: Saturday 05/19/18 San Pedro Sula Hotel Copantl (BLD)

This morning after breakfast visit IMDEE center, students will get involved in activities with the center to be determined closer to visit. This afternoon we will visit a school with special needs and assist as needed with service work. This evening farewell dinner at a local restaurant.

Day 15: Sunday 05/20/18 San Pedro Sula (B)

Transfer to the airport for flight home.