

Tropical Biology Research (SLN XXX)
Bio 494, 4 credit hours
Summer, 2019

Course Meetings:

Daily June 4-21 approximately 6:30 AM through the evening in Panama. Some nights we will be up after midnight on night hikes.

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Office Hours: available by request prior to departure, then continuously while in Panama

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Office Hours: available by request prior to departure, then continuously while in Panama

Address in Panama: Casa de la Escuela, Edificio #56, Instituto Smithsonian de Investigaciones Tropicales, Colón, Republica de Panama

Course Description:

This faculty-led course fully immerses students in a field environment. The course combines standard lectures, numerous group hikes in various forest types, and excursions to cultural highlights within Panama including an indigenous Embera village, Panama Canal's Miraflores locks, and the colonial Old Quarter of Panama City. This course is unique among all of the ASU study abroad offerings in that students must take a curiosity and develop it into an independent research project including designing the study, establishing experimental techniques, collecting data, and compiling the results into a peer-reviewed journal style research paper.

While the field site is a tropical rainforest, the educational value goes beyond tropical biology as students are exposed to topics that broadly integrate ecology, biodiversity, evolution, behavior, and physiology, including but not limited to species diversity, adaptation, biogeography, conservation, and human-wildlife interactions. Even the most complex laboratory environment and design cannot come close to matching the complexity of the tropical forest and the educational stimulation it provides. Students in this course will receive a lifetime experience and, as a result, the concepts and skill sets covered will be embedded in their memory.

Course Goals:

The aim of this course is to provide students with a memorable embedded learning experience to maximize retention of course material. Course work will be provided in an integrated manner to emphasize the importance of understanding biology at multiple levels of complexity. Students will be responsible for independent effort as well as with working effectively in a team.

Learning Outcomes:

By the end of this course, each student will possess:

- An understanding of the physical, climatic, biologic, and cultural characteristics of Panama as an example of the Neotropics.
- The ability to effectively observe natural surroundings and pursue an understanding of its components.
- The ability to develop and conduct a scientific field study as well as effectively present the results in oral and written form.
- The ability to contribute as an effective team member under sometimes challenging field conditions.

Pre-requisites:

Introductory Biology (e.g., Bio 181/182 or Bio 281/282)

Required Course Texts/ Readings:

Required reading assignments will be provided via Blackboard.

Course Format:

Background material in tropical biological research will consist of faculty lectures, guest seminars, and hands-on experiments and activities. The primary focus of the course will consist of student-designed independent research projects where they will plan, receive feedback in a review process, and execute their experiments. Students will present their results orally and write up their results in the form of a peer-reviewed journal article.

Coursework:

Final grades for the courses will be assigned on based on the following:

- 50% of the grade is based on participation, which includes attendance and active involvement in lectures, hikes, and tours. Specific contributors to the assessment will include attendance, arriving and being prepared on time, attentiveness, scientific curiosity, participation in discussion, contribution to the group experiments, and respect of others.
- 50% of grade based on development and conducting of research project in Panama, including creating effective hypothesis and predictions, designing properly controlled experiments, conducting necessary pilot studies, submitting a proposal, and effort in the collection of data, quality of the presentation (spelling, grammar, clarity, and organization) and the inclusion of sufficient relevant references from the primary literature. Graded elements will include:
 - Hypotheses and Predictions document: Should include one or more ideas for research projects, with your questions or hypotheses defined, your experimental methods proposed, and the predicted results (< 2 pages, typed, double-spaced). 5%

- Proposal: This should be an expanded version of your Hypotheses and Predictions document, with more detailed methods, and pilot data (<4 pages, types, double-spaced). 5%
- The oral presentation will be accompanied by slides made with Powerpoint or similar format, and will be approximately 20 min in duration, with 10 min for questions. The presentation should outline the questions and hypotheses investigated, provide some background from the scientific literature, clearly present the methods used, and present the results in clear, understandable format using figures. Statistical support for conclusions should be provided. Presentations should conclude with a summary of conclusions and possible future directions for research. A grading rubric will be provided. 25%
- A written report will be turned in by 5 PM June 19. The written report should include an introduction with at least five references from the primary literature, your hypothesis or question, detailed methods and predictions made, all data in figures and/or table format, and a conclusions paragraph. Except for the data, the report should be less than 5 pages, double-spaced. A grading rubric will be provided. 15%

Grading will not be on a curve in that a student's grade assignment is independent of the grades assigned to other students (i.e., there is no maximum number of A's).

Tentative Course Schedule In Panama:

June 4- Arrival & Pickup at Tocumen Airport, Travel to Gamboa

June 5- Morning Local Hike, Afternoon Lectures: Panama Geography, Climate, History and Culture, Night Local Hike

June 6- Morning Local Hike, Afternoon Lecture: Research methods in Tropics and Diversity Group research project, Local Night Hike,

June 7- Morning: hike to Canopy Tower, Afternoon: Lecture on Invertebrates and Behavioral Group Projects, Group Research Project, Night Hike,

June 8 Development of individual project Ideas; Afternoon: Lectures on community ecology and plants, Night: work on proposal,-Research Ideas document due

June 9 Development of individual project Ideas, Hypotheses and Predictions due, Afternoon: Lectures on vertebrates and conservation; Night: work on proposal

June 10 Pilot project studies

June 11- Project Pilot Studies, Proposal Due

June 12- Project work day

June 13- Barro Colorado trip

June 14- project work day

June 15- Embera Drua Indigenous Village

June 16- Project work day

June 17- Morning: Hike to falls/swimming hole; Afternoon and Night: Project Work

June 18- Project Work Day

June 19- Oral presentation of your research project

June 20- Miraflores Locks, BioMuseo, Panama City

June 21- Travel to Airport & Fly back to US

Extra Credit

There will be no extra credit opportunities assigned for this course.

Late Assignments

Tardiness will lead to failure to participate in an activity, and this will be reflected in the final course grades. Similarly, late submission of research papers will not be accepted.

Course Policies

Students are expected to participate physically and mentally in all required activities. Students are also expected to participate in a subset of optional activities. Students will have respect for and be considerate of instructors and classmates at all times.

Grade Appeals

ASU has formal and informal channels to appeal a grade. If you wish to appeal any grading decisions, please see <http://catalog.asu.edu/appeal>.

Incompletes

A mark of "I" (incomplete) is given by the instructor when you have completed most of the course and are otherwise doing acceptable work but are unable to complete the course because of illness or other conditions beyond your control. You are required to arrange with the instructor for the completion of the course requirements. The arrangement must be recorded on the [Request for Grade of Incomplete form](http://students.asu.edu/forms/incomplete-grade-request) (<http://students.asu.edu/forms/incomplete-grade-request>).

Student Standards

Students are required to read and act in accordance with the provisions of this syllabus as well as university and Arizona Board of Regents policies, including:

The ABOR Code of Conduct: Arizona Board of Regents Policies 5-301 through 5-308:
<https://students.asu.edu/srr>

Academic Integrity

Academic honesty is expected of all students in all examinations, papers, laboratory work, academic transactions and records. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification and dismissal. For more information, see <http://provost.asu.edu/academicintegrity>.

If you fail to meet the standards of academic integrity in any of the criteria listed on the university policy website, sanctions will be imposed by the instructor, school, and/or dean. Academic dishonesty includes borrowing ideas without proper citation, copying others' work (including information posted on the internet), and failing to turn in your own work for group projects. Please be aware that if you follow an argument closely, even if it is not directly quoted, you must provide a citation to the publication, including the author, date and page number. If you directly quote a source, you must use quotation marks and provide the same sort of citation for each quoted sentence or phrase. You may work with other students on assignments, however, all writing that you turn in must be done independently. If you have any doubt

about whether the form of cooperation you contemplate is acceptable, ask the TA or the instructor in advance of turning in an assignment. Please be aware that the work of all students submitted electronically can be scanned using SafeAssignment, which compares them against everything posted on the internet, online article/paper databases, newspapers and magazines, and papers submitted by other students (including yourself if submitted for a previous class).

Note: Turning in an assignment (all or in part) that you completed for a previous class is considered self-plagiarism and falls under these guidelines. Any infractions of self-plagiarism are subject to the same penalties as copying someone else's work without proper citations. Students who have taken this class previously and would like to use the work from previous assignments should contact the instructor for permission to do so.

Prohibition of Commercial Note Taking Services

In accordance with [ACD 304-06 Commercial Note Taking Services](#), written permission must be secured from the official instructor of the class in order to sell the instructor's oral communication in the form of notes. Notes must have the notetaker's name as well as the instructor's name, the course number, and the date.

Student Support and Disability Accommodations

The provisions of the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990, do not apply outside of the United States, so students with disabilities may find accessibility and accommodation in a given ASU study abroad program location to be very different from what is found in the United States. Upon request, the ASU Study Abroad Office can provide information about the availability of accommodations and accessible facilities on the specific program and can help the student determine whether the student's preferred program can meet the student's accommodation needs. Students with disabilities should understand that the ASU Study Abroad Office cannot guarantee access to public transportation, buildings, or public sites on this program.

[Qualified students with disabilities may be eligible to receive academic support services and accommodations](#) during the study abroad program. Eligibility is based on qualifying disability documentation and assessment of individual need. Every effort is made to provide reasonable accommodations for qualified students with disabilities, although the nature of the accommodations that can be provided by ASU during your study abroad program will depend on a number of variables, including but not limited to availability of resources on-site, accessibility of program facilities, and any study abroad requirement of the student's degree program.

Students who believe they have a current and essential need for disability accommodations are [responsible for requesting accommodations and providing qualifying documentation](#) to the DRC at: <http://www.asu.edu/studentaffairs/ed/drc/>. If you are a student in need of special arrangements, we will do all we can to help, based on the recommendations of these services. For the sake of equity for all students, we cannot make any accommodations without formal guidance from these services. Typically, once a student discloses the need for an accommodation through their study abroad application, the ASU Study Abroad Office, the academic unit, the student and DRC will develop a plan on how to best accommodate the student within the parameters available within the onsite locations.

Drop and Add Dates/Withdrawals

Please refer to the [academic calendar](#) on the deadlines to drop/withdraw from this course. Consult with your advisor and notify your instructor if you are going to drop/withdraw this course. If you are considering a withdrawal, review the following ASU policies: [Withdrawal from Classes](#), [Medical/Compassionate Withdrawal](#).

Please note that the ASU Academic Calendar only refers to withdrawal for the academic portion of your study abroad program. Please refer to the [Study Abroad Withdrawal Policies](#) for important dates regarding withdrawing from your Faculty Directed program.

Email Communications

All email communication for this class will be done through your ASU email account. You should be in the habit of checking your ASU email regularly as you will not only receive important information about your class(es), but other important university updates and information. You are solely responsible for reading and responding if necessary to any information communicated via email. For help with your email go to: http://help.asu.edu/sims/selfhelp/SelfHelpHome.seam?dept_pk=822 and file a help desk ticket by clicking on “My Help Center.”

Campus Resources

As an ASU student you have access to many resources on campus. This includes tutoring, academic success coaching, counseling services, financial aid, disability resources, career and internship help and many opportunities to get involved in student clubs and organizations.

- Tutoring: <http://studentsuccess.asu.edu/frontpage>
- Counseling Services: <http://students.asu.edu/counseling>
- Financial Aid: <http://students.asu.edu/financialaid>
- Disability Resource Center: <http://www.asu.edu/studentaffairs/ed/drc/>
- Major/Career Exploration: <http://uc.asu.edu/majorexploration/assessment>
- Career Services: <http://students.asu.edu/career>
- Student Organizations: <http://www.asu.edu/studentaffairs/mu/clubs/>

Harassment Prohibited:

ASU policy prohibits discrimination, harassment or retaliation on the basis of race, sex, gender identity, age, religion, national origin, disability, sexual orientation, and veteran status. Violations of this policy may result in disciplinary action, including termination of employees or expulsion of students. Contact the Office of Student Rights and Responsibilities (480-965-6547) if you feel another student is harassing you based on any of the factors above; contact the Office of Equity and Inclusion (480-965-5057) if you feel an ASU employee is harassing you based on any of the factors above.

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and

harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at <http://sexualviolenceprevention.asu.edu/faqs/students>.

Establishing a Safe Environment:

Learning takes place best when a safe environment is established in the classroom. Students enrolled in this course have a responsibility to support an environment that nurtures individual and group differences and encourages engaged, honest discussions. The success of the course rests on your ability to create a safe environment where everyone feels comfortable to share and explore ideas. We must also be willing to take risks and ask critical questions. Doing so will effectively contribute to our own and others intellectual and personal growth and development. We welcome disagreements in the spirit of critical academic exchange, but please remember to be respectful of others' view points, whether you agree with them or not.

Alcohol/Drug Use: Your participation in the study abroad program is contingent upon behavior that comports with both local laws as well as adherence to the rules outlined here. No student, regardless of local laws, is to place ANY recreational drugs in their clothing, carrying bags, luggage, or residence (including our Gamboa residence). You are not to attend any class meeting with the odor of alcohol on your person or be unable to participate in the class meeting because of prior use of alcohol or drugs. Failure to adhere to local laws will result in the revocation of your authorization to participate in the study abroad program and arrangements will be made for you to return to Arizona at your expense. Additionally, any behavior, whether related to drugs and alcohol or not, that disrupts course activities, creates problematic situation with other people, or puts yourself in harm's way, will lead to a formal warning, and recurrent behavior may lead to expulsion from the course. For all other alcohol/drug infractions whether you are to be sent home at your expense or receive a full grade reduction will be decided by your instructors.

Buddy system and notification during trips into the field or to Panama City: You will sometimes make trips into the rainforest for research away from your instructors. Any such trips must be taken with a companion, and your departure time, destination, and planned return time must be recorded on the log before you leave. When on trips in Panama City, stay in your group and meet at the appointed time. If you find yourself delayed in the city, you must contact your instructors by phone or email. If possible, never leave your companion alone in the field or city. If you must do so, make every effort to notify your instructors as soon as possible.

Syllabus Disclaimer:

The course syllabus is an educational contract between the instructor and students. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. The instructor reserves the right to make changes

to the syllabus as deemed necessary. Students will be notified in a timely manner of any syllabus changes via email, or in the *Announcements* section on Blackboard.

Student Conduct Statement:

Students are required to adhere to the behavior standards listed below:

- Arizona Board of Regents Policy Manual Chapter V – Campus and Student Affairs: Code of Conduct <http://www.azregents.edu/policymanual/default.aspx>,
- ACD 125: Computer, Internet, and Electronic Communications <http://www.asu.edu/aad/manuals/acd/acd125.htm>, and
- the ASU Student Academic Integrity Policy <http://www.asu.edu/studentaffairs/studentlife/srr/index.htm>.

Students are entitled to receive instruction free from interference by other members of the class. If a student is disruptive, an instructor may ask the student to stop the disruptive behavior and warn the student that such disruptive behavior can result in withdrawal from the course. An instructor may withdraw a student from a course when the student's behavior disrupts the educational process under USI 201-10 (<http://www.asu.edu/aad/manuals/usi/usi201-10.html>).

Course discussion messages should remain focused on the assigned discussion topics. Students must maintain a cordial atmosphere and use tact in expressing differences of opinion.

Inappropriate discussion board messages may be deleted if an instructor feels it is necessary. Students will be notified privately that their posting was inappropriate. Student access to the course Send Email feature may be limited or removed if an instructor feels that students are sending inappropriate electronic messages to other students in the course.

Religious Accommodations for Students:

Students who need to be absent from class due to the observance of a religious holiday or participate in required religious functions must notify the faculty member in writing as far in advance of the holiday/obligation as possible. Students will need to identify the specific holiday or obligatory function to the faculty member. Students will not be penalized for missing class due to religious obligations/holiday observance. The student should contact the class instructor to make arrangements for making up tests/assignments.