GEO Study Abroad

SYLLABUS

MARINE BIOLOGY IN PANAMA
Instructor: Richard Emlet, Maya watts
Language of Instruction: English
UO Credits: 6
Contact Hours: 60
Total Hours of Student Engagement (THSE) in all course activities: 90

Bocas Del Toro, Panama

COURSE DESCRIPTION

An intensive field course in Panama focused on tropical coastal biology and environmental issues. The course will integrate biology of 3 distinctive coastal habitats/biomes (coral reefs, mangroves, and seagrass meadows) and consider relevant human environmental issues on global and local scales. The course will be offered in Panama at the Smithsonian Tropical Research Institute's (STRI's) Bocas Research Station (BRS), located on Isla Colon along the northwestern Caribbean coast of that country. All of these habitats are abundantly present within minutes to ½ hour boat ride. (See https://stri.si.edu/visit/bocas-del-toro).

COURSE OBJECTIVES

Typical OIMB undergraduate students take Invertebrate Zoology, Biological Oceanography, Estuarine Biology and Marine Conservation in their 2-3 terms at OIMB. Most Masters graduate students take some of these courses. Students taking this short course would get a completely new field experience - tropical based marine biology and its links to human ecology. It would require them to quickly understand the basics of TROPICAL organisms and habitats, building on their previous exposure to TEMPERATE organisms and habitats at OIMB. By requiring student applicants to have at least 1 term at OIMB and Marine Invertebrate Zoology (BI451/551) we expect to have individuals with some marine experience who can benefit from this timely exposure to a tropical setting.

Our course would make students aware of local and tropical issues of human interaction with the environment. For this region of Panama, there are considerations of indigenous vs. immigrant uses of the land, the environment, rapid increases in tourism (within the last decade) and general sustainability. Mainland use is dominated by (Chiquita) banana plantations, so impacts are both local and agro-regional on this coast. Local resource extraction is low, but tourism is rapidly increasing, including recreational sport fishing and SCUBA diving. These impacts are providing livelihood for locals and influencing already endangered large fish species.

Student Outcomes.
Students who successfully complete this course will:

1) Learn about tropical marine habitats and human use of or impacts on these habitats.
2) Develop an understanding and firsthand experience of coral reefs, mangrove and seagrass habitats by numerous snorkel trips to a variety of fringing and patch reefs, mangrove root communities and seagrass meadows.
3) Learn basics of quantifying underwater habitat diversity and abundance.
4) Conduct a planned research project, analyze data, and construct a poster to report project results.

INSTRUCTIONAL METHODOLOGY

Spring term preceding this study abroad course (Details on BI405 syllabus)

BI 405/605 Reading (1 credit) 1 hour meeting /week. The spring seminar course will require students to read primary and secondary literature that explores the habitats and environmental issues that will be seen in Panama. Students will be required to make presentations about what they have read and discuss their readings with each other and the instructors. Weekly meetings will occur at OIMB, but we will use the videoconferencing capabilities at OIMB to connect with any students on main campus. **This course will be offered pass/no pass and the evaluation will be based on completion of the assignments and participation in the discussion.** Students will be required to develop a bibliography of material useful for their experience in Panama.

Summer term preceding the September field course

Students will work to design and plan their research project to carry out during the field course in Panama. This pre-departure effort will involve periodic submissions of (and feedback on) planning reports organized around i) project design (questions and hypotheses) and background literature, ii) project experiments, methodology and expected data, and iii) a completed project proposal with a list of materials necessary to conduct the research. This component (equivalent to BI 408 Laboratory Projects) is included in the study abroad program course fee. Students do not enroll for it separately. Residency at OIMB is not required.

METHOD OF EVALUATION (GRADING)

Assessments of student work will focus on completion and quality of both journal entries and the final product.

Course Grading: Final grade will be determined by a combination of the quality of: class and field trip participation; the daily journal entries; Execution of research project including data collection, analysis and presentations (oral presentation and poster). Attendance on all field trips, in all laboratory sessions, all lectures and student talks is required.

Proposal and Summer Preparation: 10%
Participation – 10%
Daily journal entries - 30%

Research project – 50% (poster due at end of field course)

Evaluating course success

For Faculty: How did students meet the goals we declared? We will judge this relative to our expectations for this course and relative to other courses we have taught and upon which we have received feedback.

For Students: How did faculty and the course work in providing the experience you thought was to be offered? What new perspectives has this course offered? What would you remove or add to make it a more educational experience for others? Tell us in writing how we can improve your experience in a course such as this. Especially focus on what worked and what did not in this 1st time offering.

Scale of project

Twelve students, 2 faculty (Emlet and Watts). This course offers a new dimension to our Majors, graduate students and others (such as Biology and Environmental Science Majors) who populate our courses at OIMB.

Distinction between 488 and 588 credit:

Undergraduates will work in groups of 2 or 3 to plan and execute projects. Graduate students will work individually to develop and execute their own project, work on and analyze their data and prepare their own poster. (Snorkeling projects will still require students to have snorkel buddies when in the water.)

COURSE OUTLINE

Draft Schedule for Sept 2019

Day 0 – Panama City (Panama Canal Locks/Museum; Fish Market, Old Panama City, Biomuseo)

Day 1 – Monday

6:30: depart Albrook airfield (in Panama City)
7:30: arrive Bocas del Toro, go to BRS move into dorms
9:30: Set up lab/classroom/journal time, BRS orientation
1:30: Snorkel around off dock – sea grasses, patch reefs, mangrove roots
organism ID to lowest working group
4:30pm: Lecture 1 – Tropical algae, diversity, life cycles, production (MW)
5:30 ID algae collected during snorkel trip today
no evening activities since started EARLY (4:30am) in Panama City

Day 2 – Tuesday (AM ½ day boat)

7:30 ½ day boat trip to i) STRI Pt, Snorkel examine reef, reef flat, mangrove roots
ii) Hospital Pt (coral ID, fish ID use camera and allow time to look at images when back)
snorkel examine reef, back reef; iii) Mangrove point
snorkel examine reef, reef flat, mangroves roots – (coral ID and fish ID)
Collect mangrove roots for PM study (bags, buckets, need knife or machette)
2:00: Lecture 2 - Mangroves I, root communities (RE)
3:15-5:15 laboratory: dissect and classify root organisms

5:15 Discussion –begin talk about fishes
7:30 Lecture 3 – Coral reefs I (RE)

Day 3 – Wednesday (AM ½ day boat)
7:30: ½ day boat to i) Pt Cocos #1 (coral ID, fish ID), ii) Quadrats of reef at Cocos #1 iii) STRI Pt Transects of seagrass out from mangroves
2:00: Seagrass laboratory – field data diversity, structure of shoots, epiphytes
5:15: Journal time
8:00: night snorkel II off dock (optional)

Day 4 – Thursday (PM ½ day boat)
7:30: Begin Projects
11:00: Lecture 4 – Coral reefs II (RE)
2:00 ½ day boat trip to see reefs – i) Cocos site #2 and ii) Punta Caracol
7:30: Lecture 5: Coastal use issues –sewage/nutrients, sedimentation, (MW)
8:45: very short Lab – night plankton

Day 5 – Friday – Trip to mainland STRI boat (bag lunches) – still planning
8:00: Depart for mainland Destination TBA (e.g. Cacao Farm, Banana Plantation, San San Pond Sak wetlands)
3:30 possible snorkel on way back to Bocas Marine Station
7:30: Lecture 6: Coral reef fish I (RE)
8:30: Journal time

Day 6 – Saturday – DAY OFF
7:30: breakfast
12:30: lunch (bag lunches) – Ask ahead of time who wants one of these as most students chose to go into town and eat there
6:30: dinner

Day 7 – Sunday
7:30: projects
2:00: projects
5:00: Lecture 7: Seagrasses I, production and trophic interactions (MW)
7:30: Lecture 8: Coral reef fish II (RE)

Day 8 – Monday (all day boat trip)
8:00: 1 day boat trip to Islas Zapatillas (Parque Bastimentos)
snorkel: btw Zapatillas islands, west end of west island, Coral Caye, STRI Pt – home at 4
5:15: Lecture 9: Coral Reefs III Formation and biology of corals or Fishes III (RE)
7:30: Journal time/research time

Day 9 – Tuesday (PM ½ day boat)
7:30: Projects
11:00: Lecture 10: Tropical marine issues – (MW)
2:00: ½ day boat trip to Mangrove Pt or another site/sites
5:15 Journal time
7:30: Projects

Day 10 – Wednesday (PM ½ day boat)
7:30 Projects
11:00: Lecture 11: Coral reproduction and larval behavior – Richard

2:00: ½ day boat trip Solarte east Pt – house on stilts, Hospital Point OR TBA
7:30: Projects and journal time

Day 11 - Thursday
7:30: Journals due, Projects
2:00: Projects
7:30: Project update presentations

Day 12 - Friday
By the end of the day - Update presentation as a final poster – save as a pdf and email to Richard and Maya
7:30: Collect any other things (data, images) for projects, work on projects
3.00: Program review by students
4.00: Pack up
7:30: open

Day 13 - Saturday
6.00 Leave for airport
8:30 arrive Albrook, then to Tocumen for return to USA

COURSE READINGS

**Please include page numbers of chapters*

This should include texts that students are required to engage with as part of the course. Suggested readings should be listed separately. If current articles are frequently added or subtracted, there should be a mention that students will also be provided additional texts, and generally, what the topic is and the source (newspapers, online, film, etc.)

Standard citation needs to include: APA

BIBLIOGRAPHY

Collin, R. 2005. Ecological Monitoring and Biodiversity Surveys at the Smithsonian Tropical Research Institute's Bocas del Toro Research Station. Caribbean Journal of Science 41 (3): 367-373.

Humann, P. and N. Deloach. 1994. Reef Fish Identification: Florida, Caribbean, Bahamas. 4th Edition. New World Publications. Pp. 537.

Humann, P., N. Deloach, and L. Wilk. 1994. Reef Creature Identification: Florida, Caribbean, Bahamas. 3rd Edition New World Publications. Pp. 295.

Humann, P. and N. Deloach. 1994. Reef Coral Identification: Florida, Caribbean, Bahamas. 3rd Edition New World Publications. Pp. 270.

*Additional sources will be included in lectures and discussions.

Academic Misconduct
The University Student Conduct Code (available at conduct.uoregon.edu) defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. By way of example, students should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations without express permission from the instructor. Students should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the students' obligation to clarify the question with the instructor before committing or attempting to commit the act. Additional information about a common form of academic misconduct, plagiarism, is available at researchguides.uoregon.edu/citing-plagiarism.

Prohibited Discrimination and Harassment Reporting
Any student who has experienced sexual assault, relationship violence, sex or gender-based bullying, stalking, and/or sexual harassment may seek resources and help at safe.uoregon.edu. To get help by phone, a student can also call either the UO's 24-hour hotline at 541-346-7244 [SAFE], or the non-confidential Title IX Coordinator at 541-346-8136. From the SAFE website, students may also connect to Callisto, a confidential, third-party reporting site that is not a part of the university.

Students experiencing any other form of prohibited discrimination or harassment can find information at respect.uoregon.edu or aaeo.uoregon.edu or contact the non-confidential AAEO office at 541-346-3123 or the Dean of Students Office at 541-346-3216 for help. As UO policy has different reporting requirements based on the nature of the reported harassment or discrimination, additional information about reporting requirements for discrimination or harassment unrelated to sexual assault, relationship violence, sex or gender based bullying, stalking, and/or sexual harassment is available at Discrimination & Harassment.

The instructor of this class, as a Student Directed Employee, will direct students who disclose sexual harassment or sexual violence to resources that can help and will only report the information shared to the university administration when the student requests that the information be reported (unless someone is in imminent risk of serious harm or a minor). The instructor of this class is required to report all other forms of prohibited discrimination or harassment to the university administration.
Specific details about confidentiality of information and reporting obligations of employees can be found at titleix.uoregon.edu.

Mandatory Reporting of Child Abuse
UO employees, including faculty, staff, and GEs, are mandatory reporters of child abuse. This statement is to advise you that your disclosure of information about child abuse to a UO employee may trigger the UO employee's duty to report that information to the designated authorities. Please refer to the following links for detailed information about mandatory reporting: Mandatory Reporting of Child Abuse and Neglect.

Students with Disabilities

The University of Oregon is working to create inclusive learning environments. Please notify me if there are aspects of the instruction or design of this course that result in disability-related barriers to your participation. You are also encouraged to contact the Accessible Education Center in 360 Oregon Hall at 541-346-1155 or uoaec@uoregon.edu.