

**Tropical Marine Biology (PCB 3355L)**  
**Study Abroad Class in Glovers Reef Atoll, Belize**  
**Summer 2022**

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**Location:** The program will occur at the Glover's Island Research Station in Belize that is owned by the Wildlife Conservation Society. The Glover's Reef Research Station is an ideal location for marine research and the only research facility within the Glover's Reef Marine Reserve. The station is located approximately 45 km off the coast of Belize on the Glover's Reef Atoll, the southernmost of Belize's three coral atolls, which supports extraordinarily high biological diversity across its 35,000 hectares. Since 1995, the station has provided a platform for scientists and students to conduct research at one of the Caribbean's most complex and important coral reef systems.

**Course Description:** This 1-week, 2-credit course will provide students with an amazing opportunity to learn about coral reef ecosystems and biodiversity in a pristine marine reserve. This program is a snorkeling-based course in which students spend a week on a remote, tropical island in Belize that is surrounded by coral reefs with the goal to learn as much as possible about this amazing habitat and other marine ecosystems. The first part of the week is dedicated to learning about marine biodiversity (fishes, corals, other invertebrates, plants) and learning field research techniques. The second part of the week will focus on undertaking group research projects underwater. Students will present their project results on the last evening of the course.

**Course Objectives:**

- 1) To provide all students with exposure to biodiversity on coral reefs.
- 2) To provide students with an understanding of coral reefs and the current threats to these reefs.
- 3) To provide students with aquatic and underwater research experiences, practice with oral presentation skills, and the opportunity to present group research project results at 2023 UCF Showcase of Undergraduate Research Excellence (SSS).

**Required Materials:** Book: *Coral Reefs: A Very Short Introduction*, Second Edition. 2021. Author: C. Sheppard. Oxford Press. ISBN 978-0-19-968277-5; notebook, writing implements, personal computer and computer media (thumb drive, etc.), flashlight, underwater camera, passport, UCF insurance card (?), mask, fins, snorkel, weight belt (if floater), waterproof watch, wetsuit or rash guard. **Make sure you pack the id book, dive slate, transect tape, and fish ID card that I will provide (or plan to provide your own).** These will be numbered and should be picked up from Dr. Walters the week prior to the trip. They should be returned within 14 days of our return to Orlando, or you will receive an F for the course. All items must be returned by July 18, 2022, to the Biology Office, Room 301 by 5 PM. **Also make sure you put in your carry-on bag a bathing suit, snorkel gear and passport in case your checked luggage is lost.** Other things to pack: syllabus, clothes, toiletries, sunscreen, insect repellent, beach towel, water bottle, camera (land), extra batteries, charger, and SD cards for digital cameras. Dress is very casual.

**Recommended Materials** (if you want to own coral reef ID books):

- 1) *Marine Plants of the Caribbean*. Littler, DS, Littler, MM, Bucher KE and Norris JN. 1989. Smithsonian Institution Press, ISBN: 0-87474-607-8
- 2) Guides by Paul Humann and Ned DeLoach. 2002. New World Publications, Inc. *Reef Coral Identification* (ISBN: 1-878348-32-9), *Reef Fish Identification* (ISBN: 1-878348-30-2), *Reef Creature Identification* (ISBN: 1-878348-31-0)

**Grading:** This is a 2-credit class and there will be 100 points available. Grades will be letter grades using the +/- system. Grades for the semester will be awarded using the following +/- scale: A+ (100% or higher), A (92-99%), A- (90-91%), B+ (88-89%), B (82-87%), B- (80-81%), C+ (78-79%), C (72-77%), C- (70-71%), D+ (68-69%), D (62-67%), D- (60-61%), < 60% = F. Please remember, you must return your borrowed id book, dive slate and ID card within 2 weeks after the trip ends or you receive an F for the course.

Organism Log = 20 points

Quiz 1: Book content = 10 points

Quiz 2: Reef biodiversity identification = 10 points

Large group project + PowerPoint presentation = 20 points

Small group project + PowerPoint presentation = 20 points

Overall Participation = 20 points

**Organism Log details:** There should be 15 fishes + other vertebrates, 10 species of coral, 8 other invertebrates, and 7 macroalgae/mangroves/seagrasses and associated plants in your completed photo log. For each organism, please include: 1) genus species, 2) common name, 3) abundance (rare to common), 4) approximate depth and location where you saw it (on reef, in seagrass bed, sand patch, etc.) and 5) interesting facts about organism. PowerPoint is recommended. Please do not send via the cloud or SharePoint.

**Whole-class Research Project on Queen Conch Abundance In/Out of Reserve:** The entire class will collaborate on tracking the abundance and size distribution of the queen conch *Strombus gigas* (plus all other conch) in locations inside and outside of the reserve at the annual time of year when harvesting ends. My goal is that you will create a poster from this data that will be presented at the Spring 2023 UCF Showcase for Undergraduate Research Excellence (SSS). Everyone will collaborate to collect this data throughout the week. You will be able to compare your results to Fanelli et al. (2021) where the last class completed a similar project and published their findings in the UCF Undergraduate Research Journal.

**Small group project details:** By the end of day 4, small group projects will be determined. We will brainstorm as a group and then you will pick your project. Approximately three snorkel trips will be devoted to collecting your data underwater. Most projects focus on some aspect of animal behavior or distribution/abundance of species. I will have a limited number of supplies to aid in your data collection (tape measures, rulers, etc.).

**Class Participation and Attitude:**

It is expected that everyone will regularly participate in this class in a positive way. To encourage participation during this unique opportunity, participation = 20% of your grade. Disrupting the class, arriving late to class or for snorkeling, rude behavior to the instructor or colleagues, sleeping in class, cell phone use during lecture/lab, or disobeying the class rules will cause you to lose points. Please remember NO drinking of alcoholic beverages and NO illegal drugs during the course. Nor can you leave the property during the week. Any of these will give you a 0/100 for the class, you will be sent home at your own expense, and you will be subjected to the UCF Disciplinary Action Committee.

### **Itinerary and Tentative Schedule:**

Please note that snorkel times refer to the boat departure time. You must have your gear and yourself on the boat ready to depart at the listed time or you will be left behind.

#### **Meal Schedule each day:**

**Breakfast: 7 – 8 AM**

**Lunch: 12 – 1 PM**

**Dinner: 6 – 7 PM**

#### **Day 1**

Arrive Belize City International Airport by noon for pick up at airport for bus trip to get to boat dock. Transport by boat to Glovers Island will take 2-3 hours.

5:00 – 6:00 PM: Lab orientation by Research Station staff

6:00 – 7:00 PM: Dinner

7:30 PM – 9:00 PM: Introductory information from Dr. Walters and Research Station Director

#### **Day 2**

7:00 – 8:00 AM: Breakfast

8:00 – 8:30 AM: Prepare gear

8:30 AM – 10:00 AM: Swim test/snorkel introduction around boat dock (no cameras)

10:00 AM – noon: First snorkel on reef, refresher on reef etiquette (cameras allowed on all snorkels from this time forward)

12:00 – 1:00 PM: Lunch

1:00 – 2:00 PM: Quiz on coral reef book content, book discussion

2:00 – 4:00 PM Snorkel for organism photos – focus on everything

4:00 – 6:00 PM: Download photographs, prepare for evening presentation of photos

6:00 – 7:00 PM: Dinner

7:30 – 9:00 PM: Share best photo with identification with class, continue book discussion

#### **Day 3**

7:00 – 8:00 AM: Breakfast

8:00 – 11:00 AM – Snorkel at 2 sites for organism photos – focus on fishes

11:00 AM - noon – noon: download photos, work on organism collection

12:00 – 1:00 PM: Lunch

1:00 – 4:00 PM: Snorkel for organism photos – focus on corals

4:00 – 6:00 PM: Download photographs, prepare for evening presentation of photos

6:00 – 7:00 PM: Dinner

7:30 – 9:00 PM: Share 2 best photos with identification with class

#### **Day 4**

7:00 – 8:00 AM: Breakfast

8:00 – 11:00 AM – Snorkel 2 sites for organism photos, including mangrove prop root area – focus on invertebrates

11:00 AM – noon: download photos, work on organism collection

12:00 – 1:00 PM: Lunch

1:00 – 4:00 PM: Snorkel for organism photos – focus on macroalgae and shoreline plants

4:00 – 6:00 PM: Download photographs, prepare for evening presentation of photos

6:00 – 7:00 PM: Dinner

7:30 – 9:00 PM: Share 2 best photos with identification with class, Decide on group projects

#### **Day 5**

7:00 – 8:00 AM: Breakfast

8:00 – 11:00 AM: Snorkeling for large group project

11:00 – 12:00: Project data download time

12:00 – 1:00 PM: Lunch

1:00 – 4:00 PM: Snorkeling for large group project

4:00 – 6:00 PM: Download photos

6:00 – 7:00 PM: Dinner

7:30 – 9:00 PM: Quiz on Glovers Biodiversity, Project methods shared with group

#### **Day 6**

7:00 – 8:00 AM: Breakfast

8:00 – 11:00 AM: Snorkeling for small group projects

11:00 – 12:00: Project data download time

12:00 – 1:00 PM: Lunch

1:00 – 4:00 PM: Snorkel for small group projects

4:00 – 6:00 PM: Download photos, finish photo organism collections

6:00 – 7:00 PM: Dinner

7:30 – 9:00 PM: Finish photo organism collections

**Midnight: Submit completed photo organism log on thumb drive before midnight.**

#### **Day 7**

7:00 – 8:00 AM: Breakfast

8:00 – 11:00 AM: Snorkeling for small or large group projects

11:00 – 12:00: Presentation preparation time

12:00 – 1:00 PM: Lunch

1:00 – 4:00 PM: One last snorkel for work or for fun

4:00 – 6:00 PM: Finish presentation

6:00 – 7:00 PM: Dinner

7:30 – 9:00 PM: Group project presentations. **Must submit copy of your PowerPoint presentation on thumb drive by 9 PM.**

**Photography contest! Categories: best vertebrate, best invertebrate, best flora, best people shot, best scenery shot, best overall!**

9:00 PM: Pack and celebrate

**Day 8**

6:00 AM: Breakfast

6:30 AM: Depart lab by boat, bus to return to Belize International Airport

**Contacts for Glovers Island Research Station:**

[grmrs@wcs.org](mailto:grmrs@wcs.org) (Operations Manager)

[ksephton@wcs.org](mailto:ksephton@wcs.org) (World Conservation Society liaison for station)

501-532-2153 (24/7 emergency contact number for station)

Takes approximately 3 hr by bus/boat to get to Glovers from Belize City