

Instructor: James Hunt, Director of Marine Sciences at East Stroudsburg University

Required Materials: dedicated notebook for field journal

Recommended texts: 3 book “set”: Reef Fish, Reef Creature, and Reef Coral by Humann & Deloach

Course purpose: coral reefs are unique assemblages of life and one of the most appealing ecosystems in marine science. The unique biology of corals allows high productivity and diversity in an area that should produce very little. The focus of this course is to introduce you to the unique aspects of coral reefs, and to give you a working knowledge of reef species and reef ecology.

Course goals: by the end of this course, you should be able to: 1) identify most of the common organisms inhabiting Caribbean coral reefs, 2) understand the challenges facing reefs today and the methods used to study coral ecosystems and 3) feel confident in your experiences studying reef ecology and prepared for further reef study in the future should you choose to do so.

Grading:

One exam	35%
All quizzes	35%
Field Assignments	30%

Course Grading Scheme:

A = 94 – 100%; A- = 90-93%
B+ = 87-89; B = 83-86; B- = 80-82%
C+ = 77-79; C = 73-76; C- = 70-72%
D = 60 – 70%
E = below 60%

Quizzes and exam: there will be one exam during the course on Friday, May 24th. This exam will cover all material from lectures during the previous week. It is effectively our first and final exam. There will also be four daily quizzes on Tuesday – Friday morning covering the previous day’s identification work and a few questions from lectures. There will be field quizzes given in Roatan as well as a final identification quiz.

Field assignments: this is obviously an “all in” participation kind of class. I expect students to attend all dives unless ill, complete all exercises unless unforeseen problems arise in the water, be prepared and ready for each day, be on time and respectful of others in the class and those leading our activities. **Anyone judged not in physical condition to dive will NOT be allowed to dive under any circumstances, no exceptions and no arguing.** Final decision will be made by the dive masters and myself. Illness such as colds will excuse a student from the dive responsibilities of the day, but illness due to poor student choice (lack of sleep, etc.) will result in loss of credit for the dive. I want you to enjoy yourself, but I will not allow you to dive under unsafe circumstances. Use discretion during your downtime.

Daily Syllabus in Virginia:

Mo 5/20

- 9:00 Introduction to the course
Overview of reefs
- 1:00 Ecology concepts: a review/primer
Basic coral biology & ecology
Identification set #1 (Coral ID List)

Tu 5/21

- 9:00 quiz 1
Reef inhabitants
Symbiosis of corals and zooxanthellae
- 1:00 Calcification
Bioerosion
Identification set #2 (Fish ID List #1)

We 5/22

- 9:00 quiz 2
Disease
Geography and Earth History
- 1:00 Evolution and coral development
Coral Reefs as part of tropical ecosystems
Identification set #3 (Fish ID List #2)

Th 5/23

- 9:00 quiz 3
Management of reef systems
Coral conservation
- 1:00 Economic impacts of corals on local communities
Climate change and coral ecology
Identification set #4 (Invertebrate List)

Fr 5/24

- 8:00 quiz 4
Exam
Pack and check out, meet at vans after lunch
- 1:00 drive to Philadelphia

**MARINE SCIENCE CONSORTIUM
ACADEMIC EXERCISES SCHEDULE
ROATAN INSTITUTE OF MARINE SCIENCES
CORAL REEF ECOLOGY - 2013**

Sa 5/25

12 PM Arrival and Transfer to Resort

Orientation to Resort, unpack and settle in.

Su 5/26

9:00 Class: Orientation to RIMS (RIMS Classroom)

10:00 Checkout Dive

Determination of student's SCUBA skills, including mask flooding/clearing and regulator recovery.

10:30 Buoyancy Dive

Students undergo a weights check and fine tune their buoyancy skills by performing the fin-pivot, bottom sitting, and hovering skills. They also practice the head down posture.

1:15 Class: Coral ID Review

2:00 Coral ID Field Exercise 1

Numbered cork markers are placed at 12 different coral species in shallow reef area. Students are provided with a list of species scientific names and forms, which they copy on their dive slates. During the dive, students will place appropriate number with corresponding names. Slates are collected immediately after dive.

Mo 5/27

9:00 Coral ID Practical Exercise 2

The previous exercise is repeated at a different site and at similar depth. However, identification is made in the field this time without a list of species provided.

Lunch on Maya Key (all day boat trip to Southside)

1:00 Tour of Animals and Cultural Center

2:00 Smith Bank *Acropora Cervicornis* Dive (weather permitting)

Tu 5/28

8:30 Class: Sponge ID

9:15 Sponge ID Dive Exercise

Prior to dive, students are provided with a list of common sponges that they write on their slates. Cork markers are placed on 10 sponges at a depth of 60 feet. Students match sponge species with its corresponding numbered cork. Slates are collected immediately after the dive.

2:00 Sponge ID Dive Exercise

The previous exercise is repeated at a different site and at similar depth. However, identification is made in the field this time without a list of species provided.

4:00 Class: Marine Monitoring Lecture

A lecture is given by RIMS Education Director about current research on coral reefs of Roatan. Included will be descriptions of various monitoring techniques that will be used by students in subsequent dive exercises.

We 5/29

8:30 Class: Algae Review

9:00 Algae ID Dive Exercise

Working in buddy teams, students collect at least three different species each of red, green and brown algae from a shallow dive site of no more than 35 feet. These are returned to the wet lab.

11:00 Algae ID Lab

Using field guides, students identify all collected species of algae in wet lab. After that exercise, students return to classroom for a review of sponges identified earlier in the day.

2:00 Class: Dolphin Lecture

3:00 Classroom Session

EVE BBQ Fiesta on Key

Th 5/30

8:00 Class - Transect Review

8:30 Transect Dive

Transect lines are placed at 2 different depths. Students will perform a point-intercept transect at 0.5 m increments using general life-form categories.

10:30 Transect Dive

Transect lines are placed at 2 different depths. Students will perform a point-intercept transect at 0.5 m increments using general life-form categories.

Picnic Lunch on Anthony's Key

2:00 Class: Turtle Talk

3:00 Classroom Session

Students compile and share data collected during the morning exercises.

6:15 First Night Dive

This dive is an exercise to record nocturnal differences in behavior of marine organisms. These differences are recorded as journal entries.

Fr 5/31

8:00 Class: Mangrove Talk

8:45 Mangrove Snorkel

A field lecture is given and followed by a snorkel among the mangrove trees. Students take notes on dive slates for journal entries.

10:00 Back Reef Snorkel

Students snorkel and collect various organisms in a lagoon outside the Roatan Marine Sanctuary. Those organisms that can be collected without harm to them are returned to tanks onboard dive boat. After identifications, organisms are returned to lagoon.

1:30 Class- Quadrat Exercise Review

2:00 Quadrat Sample Exercise

Dive masters place 1 m quadrats on reef. Students work in buddy groups to conduct a detailed survey of one-meter quadrat and record all information on their dive slates.

4:30 Class: Fish Monitoring Lecture

Sa 6/1

7:00 Free day, possible excursion trip (optional)

Su 6/2

9:00 Fish Survey Dive I

Students will use REEF Roving Diver Method to count indicator species on a drift dive at a deeper depth

12:00 Dolphin Encounter

Students are introduced to fish monitoring techniques that will be used in subsequent exercises.

Students participate in beach encounter and snorkel swim with dolphins

PM FREE TIME (horseback riding, kayak)

Mo 6/3

7:15 Possible Smith Bank Shallow Dive (weather permitting)

Lunch at Maya Key

2:00 Fish Survey Dive II

Students will use REEF Roving Diver Method to count indicator species on a drift dive at a shallower depth.

EVE Classroom Session

Students compile and share data collected in all fish monitoring dives **Student Independent Research Project**

Student group independent research projects **written proposals** are due for approval and dive plans must be coordinated with dive masters.

Tu 6/4

8:30 Independent Project Dive I

10:30 Independent Project Dive II

EVE Classroom Session

Students begin to compose and type independent projects as PowerPoint presentations

We 6/5

8:30 Independent Project Dive III

10:30 Independent Project Dive IV

PM Students continue to compose and type independent projects as PowerPoint presentations

EVE BBQ Fiesta on Key

Th 6/6

9:00 Wreck Dive

Picnic Lunch on Anthony's Key

2:00 Free -Optional Island Tour and Shopping

6:15 Optional Night Dive

Fr 6/7

9:00 Final Examination

Research PowerPoint Presentations

PM Pack and check out

Free

Sa 6/8

AM Return Flights to Atlanta and Philadelphia