BIOL 294 Coral Reef Ecology Representative Syllabus

Instructor: Dominique Didier, Millersville University
Cell phone: 717-875-5859 (please add me to your What's App contacts)
ddidier@millersville.edu

Required Materials: dedicated notebook for field journal (or laptop)

Required text: "Caribbean Reef Life of the Bay Islands, Honduras" or the updated edition "Caribbean Reef Life" by Mickey Charteris

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.

Your Grade will be based on the following:

I. Quizzes: 40 pts. (15%)

While in Virginia there will be 4 quizzes of approximately 10 pts. each. Each quiz will focus on material from the previous day with an emphasis on species identification.

II. Exam: 75 pts. (30%)

There will be one exam in this class which will cover all material from lectures and may also include some species identification questions.

III. Field exercises ~40 pts. (15%)

While in Honduras you will complete several field exercises in which you must identify organisms in the field.

IV. Presentation 50 pts. (30%)

Part I: While in VA you will conduct research on a coral reef topic of your choice. Your research will be based on credible peer-reviewed sources and will provide in-depth knowledge of the topic appropriate for the college level. This presentation will form the foundation for your observations and presentation in Honduras. (30 pts.)

Part II: While in Honduras you will make observations, take notes, and photograph examples/incidences and/or related observations appropriate to your topic. Your final presentation will synthesize what you learned from your research and actually observed in the field. Appropriate observations can come from dives and/or lectures or other field experiences. (20 pts.)

V. Field Notebook 25 pts. (10%)

While in Honduras you will record observations of every dive and field activity. You are expected to keep notes of dive sites, conditions, as well as organisms sighted and other interesting observations.

Grades will be assigned as follows:

A = 93 – 100%	C+ = 77 – 79%
A- = 90 – 92%	C = 73 – 76%
B+ = 87 – 89%	C- = 70 – 72%
B = 83 – 86%	D = 60 – 69%
B- = 80 – 82%	F = less than 60%

Daily Program at CBFS in Virginia:

Monday

9:00 Introduction to the course
Fundamentals of Ecology
Discuss presentation ideas
1:00 Coral biology & diversity
Identification set #1 (Cnidaria ID List)
7:00 Complete Honduras Immigration Precheck and customs declaration

Tuesday

9:00 quiz 1
Coral Reefs and Reef formation
Reef inhabitants
Identification set #2 (Porifera ID List)
Identification set #3 (Invertebrates)
1:00 Coral Reefs as part of Tropical Ecosystems
Select presentation topic

Wednesday

9:00 quiz 2
Threats to Coral Reefs
1:00 Reef fish biology and diversity
Identification set #4 (Fish ID List #1)
3:00 Visit to Assateague National Seashore and Chincoteague Island

Thursday

9:00 quiz 3
Reef fish behavior and ecology
Identification set #5 (Fish ID List #2)
Management and Conservation of Coral Reefs
1:00 Study/work on presentations

Friday

9:00 quiz 4
Pre-trip meeting
Work on presentations
3:00 Presentations

Saturday

10:00 Exam
1:00 free time/beach/optional trip to pick up last-minute items

Sunday

AM Pack and check out
12:00 meet at vans; Travel to PHL
PM stay in airport hotel

ACADEMIC EXERCISES SCHEDULE
ROATAN INSTITUTE OF MARINE SCIENCES

A note about field work: 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 master or RIMS director 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. Please note lecture times given while in Roatan are a mandatory part of the class. *A reduction in your grade due to lack of participation is at the discretion of the Professor.*

Monday

1 PM Arrival and Transfer to Resort
Orientation to Resort, unpack and settle in.
Class: Orientation to RIMS (RIMS Classroom)

Tuesday

8:00 Class: Coral ID Review

9:00 Rent Gear
Checkout & Buoyancy Dive
Determination of student's SCUBA skills, including mask flooding/clearing and regulator recovery. 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.

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.

Wednesday

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.

1:30 Class: Sponge ID

2:30 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.

EVE BBQ Fiesta on Key

Thursday

8:00 Class: Marine Macrophytes

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 Sponge ID Dive 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.

4:30 Class: Marine Monitoring Lecture (alteration: Mickey Charteris Lecture 5:00 pm)
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.

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.

Friday

8:00 Class – Transect Review (alteration: Marine monitoring and Transects)

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 (alteration: move to afternoon)
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.

2:00 Class: Turtle Talk (alteration: second Transect Dive)

3:00 Classroom Session
Students compile and share data collected during the morning exercises.
Class– Quadrat Exercise Review (alteration: move to Sunday pre-dive)

Saturday

7:00 Free day, possible excursion trip (optional); horseback riding, kayak, etc.

Sunday

8:00 Class: Dolphin Talk

9:00 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

10:30 Wreck Dive

2:00 Quadrat Sample Exercise (alteration precede at 1:30 pm with Quadrat Exercise Review)
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.

Monday

7:15 Optional Shark Dive (all students will need to be on boat regardless of participation)

10:00 Possible Smith Bank Shallow Dive (weather permitting)
Lunch on Maya Key (all day boat trip to Southside)

1:00 Tour of Animals and Cultural Center

2:00 Dive – Opportunity to make additional observations for independent projects; work on projects

Tuesday

8:00 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.

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: Fish Monitoring Lecture

2:30 Fish Survey Dive

Students will use REEF Roving Diver Method to count indicator species on a drift dive
Students compile and share data collected in all fish monitoring dives

6:15 Optional Second Night Dive

Wednesday

8:00 Coral Restoration Talk

9:00 Coral Nursery Dive

Students will have an opportunity to learn about the RIMS coral restoration program and participate by learning and performing cleaning and maintenance procedures.

2:00 Coral Nursery Dive II

Students will have an opportunity to learn about coral fragging and assist in outplanting coral fragments onto reef

EVE Work on presentations

Thursday

8:30 Dive
10:30 Dive
4:00 Presentations
EVE BBQ Fiesta on Key

Friday

AM Pack and check out
PM Return Flight