

## Marine Ecology Laboratory

Instructor: Dr. Mark J. Butler    Phone: 683-3609    Email: mbutler@odu.edu  
 Office: 310 MGB    Office Hrs: By appointment this ensures that we can meet  
 when you and I are both available.  
 Classroom: MGB 353    Class Days & Hrs: Thursdays 1:30 – 6:00 PM

### Tentative Course Schedule

<u>Date</u>	<u>Lab/Field Activity</u>
Aug 29	Quantitative Field Methods (lab)
Sept 5	<i>Ocypode</i> quadrat and plotless methods study (field – beach)
Sept 12	<i>Littorina</i> mark–recapture study (field - saltmarsh)
Sept 19	<i>Littorina</i> mark–recapture study (field - saltmarsh)
	<b>Lab Report #1 Due on quadrat &amp; plotless methods project</b>
Sept 26	<i>Littorina</i> mark–recapture study (field - saltmarsh)
Oct 3	Group Scientific Paper Discussion & Florida Keys Trip Prep (lab)
Oct 9 - 15	Florida Keys Trip: tropical marine ecology (field – tropical habitats)
Oct 17	<b>NO CLASS:</b> work on Florida Keys data analyses & presentations
Oct 24	Independent Project Planning (lab)
	<b>Lab Report #2 Due on mark-recapture project</b>
Oct 31	Saltmarsh Independent Projects (field)
Nov 7	<b>Florida Keys Project Presentations &amp;</b> Group Scientific Paper Discussion (lab)
	<b>Lab Report #3 Due on Florida Keys projects</b>
Nov 14	Saltmarsh Independent Projects (field)
Nov 21	Saltmarsh Independent Projects (field)
Nov 28	NO CLASS – THANKSGIVING HOLIDAY
<b>Dec 5</b>	<b>Saltmarsh Independent Project Oral Presentations (lab)</b>
	<b>Virginia &amp; Caribbean Marine Organism ID Quiz (lab)</b>
	<b>Lab Report #4 Due: Saltmarsh Independent Projects</b>

Note: Be prepared for “field” days (indicated in the schedule). You will get dirty and wet, so dress appropriately. No sandals, open toed shoes, or barefeet in the field. Field days may be long, so bring a drink and a snack if you wish or money to buy snacks on the road after lab. We will do our best to be back to campus by 6 PM, but we may be later on some days. If this is an issue, please make your own transportation arrangements so you can leave the field site earlier.

### Course Objectives & Overview

Through our field excursions and projects, students will become familiar with the research techniques, organisms, and ecological conditions in several marine habitats: saltmarsh, sandy beach, subtropical hard-bottom, mangrove, seagrass, and coral reef. Individual and group research projects will provide students with experience in experimental design, group project implementation and management, data analysis, and the presentation of research results in both written and oral formats. The course includes field, laboratory, and computer instruction, as well as written assignments, oral presentations, and group discussions. This course is closely tied to the Marine Ecology lecture (Biol 415) course, which students are required to take concurrently.

### Course Grading

The final grade for this course will be determined from grades received on four laboratory reports and one quiz. Students will complete the first two lab reports on their own and the last two in small groups of 2-3 students. The second two group reports require both a written and oral presentation (Powerpoint). More details on what is expected for each report are below and will be provided in class. Please note that final grades will include “+” and “-”.

	<u>Undergraduate Points Possible</u>	<u>Graduate Points Possible</u>
(1) <i>Ocypode</i> Project Report (individual grade)	100	100
(2) <i>Littorina</i> Project Report (individual grade)	100	100
(3) Florida Keys Project Report & Presentation (group grade)	300	150
(4) Independent Project Written Report (group grade)	300	250
(5) Independent Project Oral Presentation (group grade)	100	100
(6) Organism ID Quiz (individual grade)	100	100
(7) Research Proposal (grad students only)	<u>NA</u>	<u>200</u>
Total	1000pts	1000pts

### Laboratory Reports

All written assignments must be typed. In addition to content, I will evaluate the reports for grammar, spelling, and format. Due dates for each are listed on the schedule.

The **first two lab reports** should focus on answering the questions posed in the lab handouts, so the format should be in the form of verbal answers to each question with whatever tabular or graphical material is appropriate to support those answers. This report should thus be brief (<5 pages) and written on your own, without help or input from others other than assistance in collecting the data in the field.

The **last two reports – the Florida Keys report and the Independent Project report** – will be longer scientific reports and should follow standard scientific paper format: Title page, Abstract, Introduction, Methods & Materials, Results, Discussion, Literature Cited (note: a literature review and thus a Literature Cited section is only necessary for the independent project report). An **Abstract** summarizes the paper’s content, that is: objectives, general methodology, results, and implications (in that order) should be included. The **Introduction** should summarize the objectives and provide the necessary background information and rationale for the project. The **Methods & Materials** should describe the location and general methods employed in the study, and in sufficient detail that the appropriateness of the procedures can be evaluated and, if necessary, repeated by others. The **Results** section should include an adequate verbal, statistical, and graphical description of the summarized and analyzed results – do not provide raw data. The **Discussion** section should focus on your interpretation of the results - that is, the biological implications of your findings.

These last two projects will be conducted and the reports written by small groups (2 - 3) of students; that is, you will write and turn in only one report per group – so each group gets the same grade. Members of each group will also complete a form evaluating the contribution of other members of the group - those who do not pull their own weight will be penalized on the report.

**Examples of good and poor independent project papers can be found on the class Dropbox site.**

Two good references for students interested in scientific research and presentation of results:

**Graduate Research: A Guide for Students in the Sciences** (1998), 3<sup>rd</sup> Ed., by R.V. Smith, Univ. Washington Press

**How to Write and Publish a Scientific Paper** (2006), 6<sup>th</sup> Ed., by R.A. Day, Oryx Press

### **Lab Group Discussions of Scientific Literature**

We will meet twice (Oct 3<sup>rd</sup> & Nov. 7<sup>th</sup>) for an hour or so in the lab for a group discussion of one or two scientific papers. Everyone is expected to attend and participate.

### **Research Proposal (Grad Students Only)**

To obtain graduate credit for this course, grad students must complete an additional writing assignment. Specifically, they must devise and write a short grant proposal suitable for submission to the Lerner-Gray Foundation, which funds undergraduate and graduate student projects in marine zoology. This must be an original proposal. That is, it can not be a proposal that you have already written. If you are a new graduate student and have not yet written up a proposal for your thesis or dissertation, you may use this as an opportunity to get started on your thesis or dissertation prospectus. The format for these proposals must follow exactly those for the Lerner Gray Foundation. Those details can be found at:

<https://myrggs.amnh.org/documents/admissions/lgint11.pdf>

### **Field Trip to the Florida Keys**

This field trip to the Florida Keys over the fall semester break is required (see the catalog description). If you can not work it into your schedule, please drop the course immediately. You will travel by van and will leave ODU the afternoon or evening of Wed. October 9<sup>th</sup> returning Tues. October 15<sup>th</sup>. The department underwrites much of the cost of the trip, therefore the estimated cost of the trip (including food, lodging, & transportation) is approximately \$250 per person. I'll give you all the details and final cost later in the semester.

**Original Work:** Students in this course are expected to adhere to the University's Honor Code (see university website for details). I will follow the university's formal procedures for dealing with honor code violations, which are severe, so lets not make this an issue.

**Other Classroom Policies:** If you have any problems with course material or any other problems that might influence your performance in the course, see me as soon as possible – do not wait until the last minute. It is best to contact me by email, telephone, or after class to make an appointment. If you do so, I will be happy to meet with you as long as we need to. However, please do not drop by my office unannounced, especially before class.

Liability is a concern in field and laboratory courses like this one. I will do my utmost to ensure your safety but accidents happen. Therefore, you will be required to sign a liability release form if you want to participate in this class.

### **Classroom Requirements of the Department of Biological Sciences**

1. There is to be no consumption of food or drink in the laboratory or lecture rooms. If you require food or drink for medical reasons, please move to the lobby.
2. If you are in conflict with a faculty or staff member, your first point of contact is the Biology chairman. The chairman's office is located in room 110 of MGB.
3. Inform the instructor of any medical conditions or needs you may have.
4. Turn off electronic devices (cell phones, hand palms, etc.) during class.
5. Read the document "Safety in the Biology Teaching/Research Labs", which is located in each laboratory. For laboratory courses, fill out and sign the Emergency Information Sheet, which will be provided for you.

Refer any questions concerning these requirements to the Department of Biological Science Chair, Dr. Wayne Hynes, Room 110 MGB.