

**BI 454/554****Estuarine Biology****Fall 2012 Course Syllabus**

Instructor: Richard Emlet, Professor of Biology ([remlet@uoregon.edu](mailto:remlet@uoregon.edu))

Office: Tyler Research Building, OIMB                      campus phone ext: 211

Teaching Assistant: Leif Rasmuson ([rasmuson@uoregon.edu](mailto:rasmuson@uoregon.edu))

Office: Terwilliger Research Building, OIMB                      campus phone ext: 276?

**OFFICE HOURS:**     Emlet – please come by anytime; we'll talk immediately, or we can schedule a time.  
                                  Rasmuson – same as for Emlet

### DESCRIPTION OF COURSE

Estuaries are complex aquatic ecosystems situated at the interface with the coastal ocean and the terrestrial environment. Through a combination of lectures, field trips, and field and laboratory exercises, students will learn about various habitats and components of these biologically rich systems. Lectures will cover a broad range of topics on how estuaries function physically and biologically and their importance to living organisms including humans. Factors that control the abundance, distribution, production, and diversity within estuarine habitats will be identified and explored. Field trips to various habitats will let students see patterns of abundance and diversity. Field and laboratory work will teach students how organisms work, how they modify their environments and interact with other organisms. Organism identification, methods for sampling and quantifying patterns, and preparation of data will also be parts of field and laboratory exercises. A weekly discussion focused around 1 or 2 scientific articles will allow students to learn how estuarine research is conducted and conclusions are reached.

This course is taught at the Oregon Institute of Marine Biology in Charleston Oregon. Each week it meets for one full day and for 1 hour on another day.

### COURSE GOALS

- Introduce students to the estuarine environment and factors that influence the abundance and distribution of marine organisms.
- Explore first hand the superb estuarine habitats, including salt marshes, sand and mud flats, rocky intertidal sites and subtidal regions that are particularly well represented in the Charleston/Coos Bay, Oregon coastal region.
- Learn to use tools of research ecologists, analyzing population variability and quantifying abundance of organisms in different habitats.
- Learn to critically read primary research literature in the area of Estuarine Biology.

### REQUIRED READING for the course:

- 1) A set of reserved readings of scientific papers that will be part of weekly discussions. These papers are listed in the course schedule (attached).

### FIELD TRIPS AND RECOMMENDED ATTIRE

- We will take a number of field trips in this course. Many will involve intertidal exploration, others will be aboard small and medium sized OIMB vessels.
- You should have a good pair of (knee-high) GUM BOOTS or a pair of HIP-WADERS (chest waders are NOT recommended).
- Old and warm clothing is recommended for field trips.

- RAIN GEAR is also recommended, we will be working low tides when it may be raining (this is Oregon).
- Laboratory equipment will be supplied, but if you have a dissecting kit bring it along to lab. Also bring your calculator.
- FIELD NOTEBOOK -taking notes on field trips & in lab is strongly recommended. This will help you carry out the assigned work and should be reviewed in preparation for exams.

#### ANTICIPATED SCHEDULE OF INSTRUCTIONAL TOPICS BY WEEK

See the attached Course Schedule for Fall 2012.

#### Basis for Undergraduate Grading:

Organism quiz (wk 5)	50 points
Midterm (wk 6)	100 points
Final exam (wk 11)	100 points
Lab/Field work	150 points
<u>Discussion</u>	<u>100 points</u>
TOTAL:	500 points

#### EXAMINATIONS -

- An Organisms Quiz will be given on week 5 as a tool to get students to learn names and be able to identify some important members of estuarine habitats.
- MIDTERM I about 1.5 hours long will be given during week 6. The midterm will cover lectures, labs and discussions for Weeks 1 through 5. A sample exam will be made available before the midterm.
- FINAL EXAM will be cumulative and also cover lecture, lab and discussion materials. A sample exam will be made available before the Final..
- Midterm I scores will be replaced by the FINAL EXAM score if the latter is better.
  
- The lab and field work component of the grade will be based on participation in these parts of class AND on individual or small group assignments that will be collected and graded.
- The discussion component of the grade will be based on the instructor's evaluation of individual's participation in the weekly group discussions on assigned scientific papers. Students who have difficulty talking in group discussions can choose to turn in a write-up (1 page, typed) of the paper that described the content and main points as well as raises questions of interest to that student.
- Scores for all parts of the course will be available to students who wish to discuss their performance.

#### STUDENT WORKLOAD EXPECTATIONS

- Students are expected to do all reading assignments (listed in course schedule) and this material may be on exams even if it is not directly covered in class. While there is no required text book, students are expected to be able to access cited references on reserve or through resources of the OIMB Rippey Library.
  
- Students are expected to thoroughly read the discussion papers and prepare notes for the weekly class discussion. Reading and preparation is essential for high performance in this part of the course.
  
- Some field and laboratory assignments will require students to work up data and prepare graphs or statistical analyses. To the extent these are not completed during class times, students will be responsible

for completion of the work outside of class. Work will be collected after class or a reasonable interval and evaluated.

#### DIFFERENTIATION OF GRADUATE VS UNDERGRADUATE WORKLOAD

For undergraduate credit the course will consist of the exams and the grading scheme described above. However, undergraduates have the option of choosing a modified graduate student scheme. Instead of testing undergraduates can choose to write 2 term papers in lieu of midterm and final exams. These will be evaluated and graded according to the scheme for graduate students. Once the first midterm has been given, the choice of grading scheme cannot be changed.

For graduate students, 2 literature-based research papers (approx. 10 typed pages, double-spaced) will be assigned in lieu of the midterm. A description of the Research paper is attached. Each paper will be critically read and marked by the instructor and graded for content, style, and grammar. Then the paper will be returned to the student for a complete rewrite. The paper will then be regraded. This write/rewrite scheme is meant to give (graduate) students critical feedback and an opportunity to improve writing skills. Graduate students will still be required to take the Organism Quiz (week 5) and the Final exam and participate in lab and discussion. The 200 points normally assigned to the Midterm and Final will be split equally into 3 parts, one for each paper and one for the Final.

#### **For students with disabilities:**

The University of Oregon is working to create inclusive learning environments. Please notify me [Emlet] if there are aspects of the instruction or design of this course that result in barriers to your participation. You may also wish to contact Disability Services in 164 Oregon Hall at 346-1155 or [disabsrv@uoregon.edu](mailto:disabsrv@uoregon.edu).

### (Graduate) RESEARCH PAPERS FOR ESTUARINE BIOLOGY

**Purpose:** To provide entering (and continuing) students with the opportunity to develop or reinforce their writing skills. For many undergraduates, science courses do not allow opportunities to practice scientific writing. For graduate students, preparation of the Thesis Proposal and writing the Thesis are the first (or only) 2 writing exercises in graduate school. For many people writing does not come easy. You will have a chance to practice and get feed back on all aspects of your writing - including content, style and grammar.

#### **Approach for each paper:**

Pick a topic in Estuarine Biology, investigate this topic in detail by finding and reading the primary literature. Write an essay-style paper synthesizing the information that you read.

Your choice of topic is up to you, as long as it fits easily into the realm of estuarine biology. If you want to discuss the topic or want suggestions for where to start looking for relevant papers come see me. You may start with a topic and after some reading find it is too large to pursue, so you might have to narrow the scope of your topic.

Use the library. Find out what is in it - journals, reprints, dissertations and theses. You will also need to use the on-line databases for searching for references. Ask Barb Butler (our librarian) to help you access this information. I also have a number of books and a reprint collection of over 6000 references that you may use if you come see me. Our holdings here at OIMB are limited, but by planning early you can

get papers from most (marine) journals mailed in here within a week of your request. Make your loan requests early and through Barbara.

### **How should you write about what you read?**

You can write:

- 1) A synthesis (or review) of a topic (e.g. "The importance of recruitment in structuring marine populations").
- 2) A critic of an experimental method (e.g. "The problems with cage experiments").
- 3) A mock mini-proposal for research. (e.g. A proposal to examine the role of disturbance in boulder field communities").
- 4) Contrast studies. (e.g. similar processes in different environments such as "The relative importance of predation in temperate and tropical rocky intertidal habitats")
- 5) Other approaches are also possible, try running one by me.

Your paper should include citations where you are referring to published work. Cite these works as is done in journals such as Ecology or Biological Bulletin and include a section on "Literature Cited" in your paper. Use your own words whenever possible. If you use a direct quote then identify it with quotation marks "... " and give the citation with page number immediately afterwards.

**Format:** Papers should be 10-15 pages in length. Use 2.5 cm margins on all sides. Label each page with your name and page number (use a header). **Double space** all text, except References may be single spaced. Type only on one side of the paper.

Include a title page. In the main part of the paper use headings and subheadings if you find them helpful in guiding the reader through the paper. Use a heading for literature cited.

**Schedule: Two papers are due on or before the following dates: Oct 26 and Nov 30. Rewrites, with the original, marked paper attached, are due 1 week after papers are returned.**

**How I will mark your paper:** I expect strong efforts by all. I plan to go over each manuscript making detailed comments on content, style, and grammar. I will probably write all over it. My comments are meant to be instructive. You will be asked to rewrite the paper making corrections according to my comments. Your grade for the paper will be based on the initial version and the rewrite and will include separate scores for content (the thoroughness of your investigation of a topic), style (your expression and clarity of delivering the information), and grammar (spelling, punctuation, word usage, sentence structure, etc).

**Recommendation:** Purchase or borrow a copy of Strunk and White's Elements of Style (I have one). This is an excellent little reference for grammar and word usage. We have several copies on campus should you like to borrow to examine.

Also refer to various books listed below and in the library:

Booth, V. 1981. Writing a scientific paper and speaking at scientific meetings. The Biochemical Society, London and Colchester. Pp. 48.

Booth, V. 1985. Communicating in science: writing and speaking. Cambridge University Press, Cambridge. Pp. 68.

CBE Style Manual Committee. 1983. CBE Style Manual, 5th ed.: a guide for authors, editors, and publishers in the Biological Sciences. Council of Biology Editors, Bethesda, Maryland. Pp. 324.

Day, R.A. 1992. Scientific English: a guide for scientists and other professionals. Oryx Press, Phoenix, Arizona. Pp.125.