

**BIOL 4630: Marine Ecology**  
**California State University Stanislaus**  
**Course Syllabus**

**Instructor:** Dr. Ritin Bhaduri

**Phone:** (209) 667-3485

**Office Hours:** Monday & Wednesday 10:00 AM – 12:00 PM, or by appointment.

**Office:** 263 Naraghi Hall

**Email:** rbhaduri@csustan.edu

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**Lectures:** MWF 9:00 - 9:50 AM in Rm. N221; Lab: M 2:00 – 4:50 PM in Rm N210

**Text (optional):** *Marine Biology*, 9<sup>th</sup> ed., (2012) P. Castro and M. E. Huber. McGraw Hill.

**Announcements:** We will use Moodle as our learning management system. Create a Moodle account (code: biol4630001sp16) and check for lecture slides, article links, etc. on a regular basis.

**Course Description:** Study of marine communities with emphasis on local communities. Ecology and natural history of plants and animals, and their adaptation to marine environments will be discussed. Marine Ecology is a senior-level ecology course. It is a 4-unit lecture and laboratory course. It satisfies the ecology requirement for the Biology major, is an elective in Biology, is required for the Marine Biology concentration, and is one of the options under part c of the Ecology and Field Biology concentration.

**Course Introduction:** The world's oceans are incredibly important. About 71% of earth's surface is covered by salt water. The oceans harbor the highest diversity of organisms on earth, and comprise the largest habitable environment on earth. Oceans interact with the atmosphere and affect the earth's climate. Phytoplankton produce half or more of the world's oxygen and are an enormous carbon reservoir. Every citizen of earth should know about oceans.

**Teaching Philosophy:** My teaching philosophy is that I want to share as much knowledge and understanding of the subject with students as possible. My goal for this course is that all participants learn about the biological aspects of, and come to appreciate, marine environments. To see my students excel and become empowered with the newly acquired knowledge is what I feel teaching is all about.

**Objectives:** This is a content-heavy course; the primary learning objective is therefore mainly to learn course content. You need to thoroughly learn the information presented in lecture and lab. Another learning objective is for doing ecological research, how to analyze ecological data, and how to write research reports in scientific format. These will be accomplished through laboratory and field trip activities.

**ASSESSMENT METHODS, GRADES and GRADING:**

The best assessment measure for content-heavy courses is exams. Most of your grade will be based on lecture exams, one lab exam and lab/field trip reports.

**Exams:** There will be three regular exams and a final comprehensive exam. Exams will consist of multiple choice questions. Exams will consist of definitions, comparisons, fill in the blanks, multiple-choice and short-answer questions. The final exam is comprehensive. Request for early exams must be submitted *in writing* to the instructor prior to the scheduled exam. You will need to provide written (documented) evidence of hardship. **No makeup exams will be given after graded exams are returned to the class.**

**Cheating and Plagiarism:** Don't do it! Your work should reflect your own effort and words. Any verified instance of cheating and/or plagiarism will be unpleasant for all involved.

Assessment	Percentage	Grading Scale
Exam 1	10	A = 90% or higher (A- = 90-92, A = 93 and higher) B = 80 – 89% (B- = 80-82, B = 83-86, B+ = 87-89) C = 70 – 79% (C- = 70-72, C = 73-76, C+ = 77-79) D = 60 – 69% (D- = 60-62, D = 63-66, D+ = 67-69) F = below 60%  <b>Note:</b> Grades: A – F; CR/NC is not an option in this course. The course may be graded plus/minus.
Exam 2	10	
Exam 3	10	
Exam 4 (Final-Comprehensive)	15	
Midterm Lab Exam	10	
Labs/field reports	10	
Research project	20	
Seminar	10	
Participation	5	
<b>Total</b>	<b>100%</b>	

### Important Dates:

- Jan 29 – Classes Start
- Mar 28 – Apr 1: Spring break
- May 18 – Last day of classes

### EXPECTATIONS OF STUDENTS

1. Attend all class meetings. Be on time to class and stay in lab until it is supposed to be over. If you must miss a class/lab meeting, it is your responsibility to make up any work missed and to obtain and learn all information you missed.
2. Participation on weekend field trips is required.
3. Students are expected to take exams on days and times listed in the class schedule. There are NO alternatives for lab exams. If you have a legitimate excuse to miss a lecture exam, the instructor needs to know, before the beginning of the exam time, and other arrangements need to be made prior to the exam time. Additionally, you should be prepared to provide documentation (doctor's note, etc.) for missing a lecture exam.
4. Observe lab safety and cleanliness procedures. Please clean up after every lab. Remember to consult the lab safety manual. Here is the link to the entire safety manual:

[http://biology.csustan.edu/images/resources/pdf/safety\\_manual.pdf](http://biology.csustan.edu/images/resources/pdf/safety_manual.pdf)

5. Cheating in any form is unacceptable in science, including in all biology classes. This includes Zoology 4440. It is the policy of the Department of Biological Sciences that anyone caught cheating will receive a grade of F for the course. The instructor reserves the right to request any student even suspected of cheating to take a second, different, exam from the rest of the class.

6. Participate fully and in a positive manner in all class activities.

7. Talking, whispering, and giggling among students during lectures is disruptive for both classmates and the instructor. It is expected that students will refrain from these activities while anyone is lecturing at any time during lecture or lab time. If this becomes a problem, students will be asked to leave class for the duration of these activities.

8. Cell phones must be turned off during lecture or lab time. Cell phones PDA's, head phones, palms, etc. must be turned off, and must be placed out of sight of any student in the class, during all lecture and lab exams. No caps or hats may be worn during lecture or lab exams. Potty breaks are not allowed during lecture or lab exams.

9. People learn best when they take responsibility for their own learning. You need to accept that responsibility.

*It is my hope and expectation that we will all work together to make this course an outstanding experience for all involved.*

**Study Skills:** The following suggestions may help you succeed in this and other classes.

1. **Read** the chapter before class and bring questions you have from the chapter to class.

2. **Attend** class.

3. **Complete all assignments** and turn them in on time.

4. **Take notes** in a way that is intuitive to you, even if you have to use a lot of paper.

5. **Join a study group** with likeminded individuals. Students who study in groups tend to do better than those that study alone.

6. **Study** for the exams sooner than the night before or morning of the exam.

7. **Go to bed early** the night before and get up early the day of exams.

8. **Learn how you learn** and then stick with a style or process that is successful for you.

9. Learning takes time and is difficult (impossible?) to do in a single session before an exam. **Form a study group that meets regularly** so you can talk about new concepts and review terminology with your colleagues. When studying for exams, focus primarily on lecture notes, concepts emphasized in class, and any assigned readings.

### LECTURE, LAB, and FIELD TRIP SCHEDULE (Tentative)

Week of	Topics	Chapters
Jan. 25	Course Introduction, The Science of Marine Biology	1
Feb. 1	The Sea Floor	2
Feb. 8	Chemical & Physical Factors	3
Feb. 15	The Microbial Life	5
Feb. 22	Primary Producers: Seaweeds and Plants	6
Feb. 29	<b>Lecture Exam 1;</b> Marine Invertebrates	7
Mar. 7	Marine Fish, Reptiles, Birds, and Mammals	8,9
Mar. 14	Introduction to Marine Ecology	10
Mar. 21	Between the Tides	11
Apr. 4	<b>Lecture Exam 2 &amp; Lab Exam;</b> Estuaries: Where Rivers Meet the Sea	12
Apr. 11	Estuaries continued	12
Apr. 18	Life on the Continental Shelf	13
Apr. 25	Coral Reefs, Life Near the Surface	14, 15
May 2	Research talks; Ocean Depths	16
May 9	<b>Exam 3;</b> Marine Pollution	18
May 16	Course Review	

**Final Exam (Comprehensive):** Monday, May 23: 8:30 AM - 10:30 AM

**Field Trips**      **Required!** We will depart CSU Stanislaus campus at 7:00 AM and return by 8 PM latest.

**Dates**            **Sites**

Mar. 19            Moss Landing Marine Laboratory (9:30 – 10:30 am)  
Rocky shore tide pools: LiMPETS activity (Low tide: 3 pm)

Apr. 30            Tide Pools (Research Project): Low tide: 12 noon  
Elkhorn Slough National Estuarine Research Reserve (1:30 pm – 5 pm)

### Schedule of Student Seminars & Guidelines

Your seminar should have the following sections: Introduction (with pictures), Materials/Methods (outline), Data (graphs), and Discussion/Conclusion. Use bullet points on your PPT slides. Avoid reading, either from slides or note cards. Try your best to make your presentation as interesting as possible. Your presentation will be held during the laboratory period and should last for ~20 min, followed by 5 min for questions/discussions.

BIOL 4630 Spring'16	Seminar topics	Dates
Ah Yo, Alexis	Seamounts	2/15
Anderson, Christina	Hydrothermal vents	2/15
Behlen, Connor	Submerged aquatic vegetation	2/22
Davis, Brittany	Nutritional value of seaweeds	2/22
Figley, Aaron	Mangroves increase fishery yield	2/22
Figueroa, Michael	Harmful algal blooms and eutrophication	3/7
Assad, Ranim	Hot spots of marine biodiversity	3/7
Garcia, Sandra	Anoxic zones	3/7
Grewal, Gursimran	Sharks decline and effects on marine ecosystems	3/14
Jara, Mary Candy	Habitat selection behavior	3/14
Kaur, Daljit	Whale remains become an ecosystem	3/14
Khammanh, Dao	The power of plankton	3/21
King, Mallory	Human trampling on rocky shore communities	3/21
Koochof, Melanie	Marine commensalism	4/11
Kumar, Rahul	Marine parasitism	4/11
Ly, Sheng	A hydroid as a keystone species	4/11
Mahloch, Alexis	Acidification of oceans	4/18
Montoya, Nicole	Living in a contaminated estuary	4/18
Rincon, Joaquin	Cleaning symbiosis	4/25
Savala, Torivo	Endangered coral reefs	4/25
Taitano, Chelsea	Marine pollution: Microbes	5/16
Yamaguchi, Taiga	Marine pollution: Heavy metals	5/16

**Oral Presentation Evaluation Form**

Presenter: \_\_\_\_\_

Seminar Title: \_\_\_\_\_ Total Points: \_\_\_\_/50

**I. Style**

\_\_\_\_\_ The talk fits the time limit. (Note: Presentations are 20 minutes ( $\pm$  2 minutes) excluding questions. Presentations outside the target time lose 5 points.

\_\_\_\_\_ Enough time is spent on each slide to allow the audience to absorb the information.

\_\_\_\_\_ The visuals have large and concise text and are readable by all audience members. Use bullets.

\_\_\_\_\_ Information in tables and figures are readable by all audience members.

\_\_\_\_\_ The talk is **NOT** read. 5 – 10 points will be deducted if the talk is read.

\_\_\_\_\_ The flow, message, and length of the talk indicate the speaker practiced the talk.

\_\_\_\_\_ The presentation can be clearly heard by all audience members and there are no distracting mannerisms.

**II. Content**

\_\_\_\_\_ The guiding question/message of the talk is stated at the beginning. Include a title slide.

\_\_\_\_\_ Information presented is appropriate for a scientific audience.

\_\_\_\_\_ The introduction is brief in proportion to the length of the talk.

\_\_\_\_\_ Methods are shown in with sufficient detail to support the results.

\_\_\_\_\_ The format of each table/figure is described before focusing on the content.

\_\_\_\_\_ Relevant findings in figures and tables are adequately described.

\_\_\_\_\_ Clear and concise conclusions are stated at the end in a form to reinforce the message.

\_\_\_\_\_ The presenter appears to understand the material.

\_\_\_\_\_ The presenter handles questions well.

\_\_\_\_\_ The presenter appears to have more knowledge of subject (as evidenced by handling of questions) than given in presentation.

\_\_\_\_\_ The information from different articles (sources) is integrated. Include a bibliography slide.

Overall Comments:

### **Guidelines for Research Project**

The purpose of this assignment is to provide you with an opportunity to do further investigation on a topic that particularly interests you in Marine Ecology. Such a project will provide you exposure to reference materials via library and web search, allow you to design and conduct experiments, gather data and test hypothesis, and present your findings in oral (seminar) and written form. These presentations should include an introduction, hypothesis tested, materials & methods, results, discussion, and bibliography.

Your chosen topic must be approved by your professor. There are numerous topics that can be explored. You may undertake a project with a field component, laboratory, or a combination of both. Examples include distribution, effects of any abiotic factor (e.g., salinity, temperature, pH, etc.) on certain behavioral aspect, survey of parasites, etc. of a specific organism that interests you. Simple projects are encouraged and data collection should be completed during field work on April 30, 2016.

You must work with your instructor all along when doing the project. I encourage creativity and welcome development of unique projects. It is my hope that you will view this project as a great learning experience rather than a mere fulfillment of a course requirement. It will be to your advantage to have a research experience of this nature under your belt, especially when you consider future professional opportunities.