



## BIOE 108 Marine Ecology- Syllabus Summer 2022

### Session I: June 21 – July 21, 2022

**Where:** Zoom (link in Canvas)

**When:** Tu/Th 9:00am-12:30pm (discussion section is the last 45 minutes using different Zoom links)

**Instructor:** Casey Sheridan

**Email:** [csheridan@ucsc.edu](mailto:csheridan@ucsc.edu)

**Virtual Office Hours:** Tuesday: 3-4pm; Thursday: 3-4pm or by appointment (Zoom link in Canvas)

**TA: Mark Morales (** [mamamora@ucsc.edu](mailto:mamamora@ucsc.edu) **)**

**OH:**TBD, Zoom link on Canvas

**TA: Sarah Lummis (** [slummis@ucsc.edu](mailto:slummis@ucsc.edu) **)**

**OH:**TBD, Zoom link on Canvas

**Class website:** Canvas (BIOE-108-01)

#### **Withdrawal and Drop Dates:**

Add – June 23 Drop - Monday, June 27 (tuition reversed)

Request "W" Grade - Friday, July 10 (no tuition reversal)

You must drop yourself, you will not be dropped for non-attendance in summer session.

**Permission Codes:** The Summer Session office provides students with permission codes. All requests and override approvals are sent to [summer@ucsc.edu](mailto:summer@ucsc.edu).

## Course Description

### **Class overview**

The goal of this course is to introduce you to the foundational concepts and theories that shape the way we understand and study populations and communities in marine ecology. Through this understanding, you will learn how to conduct ecological research in coastal marine ecosystems. This course also partially fulfills the Disciplinary Communication requirement. As such, we will not only focus on content but also the important scientific practices of observing patterns in nature, creating hypotheses, and designing experiments. A purely lecture style class will not be conducive to learning these skills, we will use both active and collaborative learning strategies to master course material.

We will be recording zoom lectures to help you with your assignments, but a significant portion of your grade will come from in-class activities and participation. We hope to create a culture of active participation in this course even over zoom because we have found it is the best way to retain information and engage in learning.

**This class has to move at a very fast pace due to the shortened schedule of a 5-week Summer Session. It is imperative you stay on top of the pattern assignments and discussion readings and review the lecture material as we go. There is a greatly reduced ability to catch up on the class if you fall behind. Please consider carefully whether you have the necessary time to devote to this class to be successful. If you are unsure, feel free to reach out to the instructor or TAs and we would be happy to discuss things with you.**

### **Learning Objectives**

- Students will be able to identify and describe the frameworks that explain the structure and dynamics of marine communities
- Students will develop multiple hypotheses to explain spatial or temporal patterns (e.g. changes in abundance of a species over time) they observe in nature and design experiments to test their hypotheses
- Students will learn to read, discuss, critique, and synthesize the main conclusions of foundational marine ecology papers
- Students will learn to correctly interpret graphs and will be able to create graphs that illustrate key results
- Students will learn about a multitude of marine ecosystems and will be able to use their knowledge to educate the public on facts or theories that excite people about the marine environment they are in or near

### **Required course prerequisites**

Biology 20A, 20B, and 20C or equivalent (1 yr Introductory Biology)

### **Readings**

There will be no textbook in this class, instead we will read papers from the primary literature. Readings are available on Canvas. We will try to keep required readings to a minimum. I will announce readings on Canvas each session, but they are also listed in the course schedule.

### **Writing**

BIOE 108 is one of several EEB courses that contribute to fulfilling half of the Disciplinary Communication (DC) graduation requirement! Therefore, your writing assignments (i.e. your field journal) are taken very seriously and you are expected to do the same. Communication in ecology and evolutionary biology consists of accurately and concisely conveying information through text, graphs, illustrations and speaking. You will be assessed on how well you respond to the feedback provided to you on each of the field pattern journal assignments.

Please consult the [EEB writing guide](#) for additional writing tips.

## **Assignments and Exam**

The major goal of this course is to teach you how to conduct marine ecological research. Lectures and exams have limited ability to teach and assess how to conduct marine ecological research. For this reason, you will use pattern journals to (1) conduct the basic tasks of observing and recording patterns in nature, (2) develop hypotheses to explain your observed

patterns, (3) and eventually come up with tests of your hypotheses. There will be one midterm and final exam— all potential exam questions will be available before the test date to give you time to prepare your answers. Additionally, an in-class quiz will be due at the end of each class.

1) Pattern and Hypothesis Journals: The description of patterns is a fundamental component of ecological studies and science in general. Patterns motivate the questions and hypotheses that ecologists propose and the studies/experiments they design to address them.

For your journal of ecological patterns, you will submit:

- a. 2 patterns due **June 23**
- b. 2 new patterns due **July 30**
- c. 2 new patterns with hypothesis due **July 7**

- d. 2 new patterns with hypothesis and tests of hypotheses due **July 14**
- e. 1 revised pattern with hypotheses, and tests of hypotheses due **July 21**

2) In class quizzes: During each class, a short quiz will be given to ensure you are comfortable with the material from the assigned readings. You will get some credit just for taking this quiz and it will be graded for accuracy.

3) Midterm and Final Exam: There will be one midterm and final, worth 20 and 25% of your grade. The questions will be mixed format (e.g. some multiple choice, short answer, matching) primarily based on the lecture content.

### Grading Breakdown:

Category	% of grade
Pattern and hypothesis journal	35%
Content check quizzes	10%
Participation in class including: attendance, completing active learning activities, leading primary literature discussion	10%
Midterm	20%
Final	25%

### Policies regarding attendance and late assignments

This abbreviated timeline to complete all the necessary written assignments during summer means it is crucial that your work is turned in on time so it can be graded quickly, and you can be provided with feedback. I will give you a half-day (12 hr) grace period for assignments. After that, late assignments will be accepted with **10% points deducted each day past the due date**. If an emergency arises that makes turning in your work impossible, contact me as soon as possible (before the deadline) and we can establish new deadlines and a plan for you to get back on track.

### Academic Integrity:

Your pattern assignments must be your own ideas and writing.

Exams are individual and be taken with no use of outside resources—this means no use of internet searches, class lecture slides or notes, communication with other students, the class Discord, etc.

**Academic dishonesty is taken very seriously. Students will receive a zero on any test or assignment in which academic dishonesty occurs and a report filed according to UCSC's [Academic Misconduct Policy](#) for Undergraduates.**

Plagiarism occurs when writers deliberately or unintentionally use another person's language, ideas, or materials and present them as their own without properly citing the source. Familiarize yourself with [resources](#) on source citation, tutorials on how to avoid plagiarism, and checklists for ensuring you have properly cited your sources.

## **Inclusion, Accessibility, Title IX**

Your suggestions for making this class as inclusive as possible are encouraged and appreciated. Please let me know if you identify ways to improve the effectiveness of the course for you personally or for other students or student groups. If any of our class meetings conflict with your religious or cultural events, please let me know so that we can work together to make alternative arrangements.

Your success in this class is important to me. If there are aspects of this course that prevent you from learning or exclude you, please let me know as soon as possible. Please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to me within the first two weeks. I encourage all students who may benefit from learning more about DRC services to contact DRC by phone at 831-459-2089 or by email at [drc@ucsc.edu](mailto:drc@ucsc.edu).

Finally, the university has instituted a number of measures designed to protect its community from sex discrimination, sexual harassment, sexual violence, and other related prohibited conduct. [Information about the Title IX Office](#), the [online reporting link](#), applicable campus resources, reporting responsibilities, the UC Policy on Sexual Violence and Sexual Harassment, and the UC Santa Cruz Procedures for Reporting and Responding to Reports of Sexual Violence and Sexual Harassment can be found at: [titleix.ucsc.edu](http://titleix.ucsc.edu).

## Tentative Schedule:

Day	Topic	Readings	Assignments
Tuesday June 21 (3.5 hours)	Intro, pattern journals, philosophy of science, stats review	1) Popper 1961 2) Hutchinson 1959	
Thursday June 23 (3.5 hours)	Fundamentals of population and community ecology	1) Paine 1996 2) Lively and Raimondi 1987	Pattern journal (2 patterns)
Tuesday June 28 (3.5 hours)	Intertidal ecology (the experimental revolution)	1) Connell 1961 2) Hughes 1994	
Thursday June 30 (3.5 hours)	Maintenance of diversity, stability, life history responses	1) Harvell 1984 2) Warner 1984 3) He and Cui 2015	Pattern journal (2 new patterns)
Tuesday July 5 (3.5 hours)	<b>MIDTERM (in-class)</b> , Settlement and Pre-settlement processes 1	1) Victor 1983 2) Gaines and Bertness 1992	
Thursday July 7 (3.5 hours)	Settlement and Pre-settlement processes 2	1) Ebert and Russel 1998 2) Keough and Downes 1982 3) Jones et al. 1999	Pattern journal (2 new patterns + hypotheses)
Tuesday July 12 (3.5 hours)	Maintenance of diversity synthesis, Biodiversity and ecosystem function	1) Connell 1978 2) Hixon and Carr 1997	
Thursday July 14 (3.5 hours)	Marine Ecosystem Review	1) Warner and Chesson 1985 2) McCauley et al. 2015	Pattern journal (2 new patterns + hypotheses + tests of hypotheses)
Tuesday July 19 (3.5 hours)	Global change in marine ecosystems	1) Pinsky 2013 2) Rasher et al. 2020	
Thursday July 21 (3.5 hours)	<b>FINAL (in-class)</b>		Pattern journal (1 pattern revised + hypotheses + tests + background)

**Participation Expectations Rubric (in class activities and paper discussions)**

Full/High Marks	<ul style="list-style-type: none"><li>• attends lecture and section on time having already read the papers</li><li>• fully participates in lecture activities</li><li>• actively contributes to group during breakout sessions</li><li>• discussion: camera on, un-muted, uses chat as applicable, writes on slides</li><li>• shares with larger group in discussion regularly</li></ul>
Partial Marks	<ul style="list-style-type: none"><li>• generally attends lecture and section on time having already read the papers</li><li>• usually participates in lecture activities</li><li>• contributes somewhat to group during breakout sessions</li><li>• discussion: one or two of the following: camera on, un-muted, uses chat as applicable, writes on slides</li><li>• rarely shares with larger group in discussion</li><li>• responds to instructor/TA when prompted</li></ul>
Low Marks	<ul style="list-style-type: none"><li>• frequently late or absent</li><li>• little evidence of prior reading of the papers</li><li>• minimal participation in lecture activities</li><li>• minimal or now contribution to group during breakout sessions</li><li>• discussion: camera off, no verbal communication, little input on slides</li><li>• minimal to no interaction with instructor/TA or peers</li></ul>