

# ESM 260 APPLIED MARINE ECOLOGY - Winter 2024

**Lectures:** Monday & Wednesday: 2:00 – 3:15 PM, 1414 Bren Hall

## **Instructor**

Hunter S. Lenihan

## **Office Hours**

3428 Bren Hall; M-W; 3:30-4:30 pm.  
([HLenihan@ucsb.edu](mailto:HLenihan@ucsb.edu))

*The major objectives of the course are to learn ecological field assessments used to detect the impacts of human activities in the marine environment, and to explore ideas and case studies in marine restoration. The course is structured around lectures, discussions, readings, quantitative problem sets, a mid-term exam (but no final), and the crafting of a research proposal. Lectures will be focused on case studies involving the application of ecology in problem solving, particularly those related to ecological impact assessment and restoration. Discussions will explore our collective understanding of major issues in marine management and ideas for problem solving. And we have a great group of guest speakers!*

*Students will work on three quantitative problem sets designed to help master the forming of research questions, the display, analysis, and interpretation of ecological data, and reporting findings in writing. These problems sets are not due. The midterm open book exam will cover material in the lectures, problem sets, and readings. The second half of the class will focus on the preparation of a short (6 page) written research proposal, as well as the presentation of the proposal in a 4 min flash talk. Students will work with me to develop the idea for their proposal.*

**Textbook:** Schmitt, R.J. & C.W. Osenberg (eds). 1996. Detecting Ecological Impacts: Concepts & Applications in Coastal Habitats. Academic Press. *Provided free online.*

## Lecture / Reading Assignment Schedule

<u>Week</u>	<u>Date</u>	<u>Lecture Topic</u>	<u>Reading</u>
1	Jan 8	Introduction/ Ecological dynamics 1	Textbook- Ch. 1
1	Jan 10	Ecological dynamics 2	
2	Jan 15	<b>Holiday</b>	Textbook- Ch. 3
2	Jan 17	Field impact assessments: BACIPS	
3	Jan 22	Field impact assessments: other strategies	Textbook- Ch. 6
3	Jan 24	<b>Discussion</b> – Ocean management challenges	
4	Jan 29	Kelp forest restoration ( <i>Dr. Dan Reed</i> )	Textbook- Ch. 10
4	Jan 31	Management experiments: oyster reef restoration	
5	Feb 5	Coral reef disturbance and resilience ( <i>Kai Kopecky</i> )	Textbook- Ch. 14
5	Feb 7	Eco-technology for restoration ( <i>Dr. Andrew Brooks</i> )	
6	Feb 12	Conservation of island resilience ( <i>Dr. Nick Holmes, TNC</i> )	
6	Feb 14	<b>Mid-term exam (open book)</b>	
7	Feb 19	<b>Holiday</b>	
7	Feb 21	Fishing impacts and fishery management	Video: Dr. Ray Hilborn
8	Feb 26	Marine reserves: community-based research	
8	Feb 28	Small-scale, community-based fishery management ( <i>Peyton Moore</i> )	
9	Mar 4	<b>Discussion</b> – Managing through Rahui in French Polynesia	
9	Mar 6	Beach ecology in a changing climate ( <i>Dr. J. Dugan</i> )	
10	Mar 11	Parasites, disease, and management ( <i>Dr. Kevin Lafferty, USGS</i> )	
10	Mar 13	<b>Student flash talks</b>	

## Quantitative Problem sets

Set 1: Identifying patterns in nature

Set 2: Hypothesis formulation

Set 3: Tests of hypotheses & management actions

## Written research proposal and oral presentations

Students to begin working with Prof to develop idea as soon as possible, but certainly by week 5