

BI 474/574: MARINE ECOLOGY

6 quarter credits

Instructor:

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Course Description:

BI 474/574 will be an ecological survey of (1) major marine habitats, (2) structurally or functionally important taxa, (3) ecological patterns and processes, as well as (4) classical and contemporary literature. Areas of particular emphasis will be Oregon rocky shore biota, soft-sediment communities, and planktonic assemblages. Laboratory activities and field trips will strongly supplement lecture material and assigned readings. This intensive field course is designed for upper-division undergraduates and graduate students in biological fields. Because of the timing of low tides, early morning field trips will be scheduled on several days. Lecture and lab times will be flexible but will be consistent with the 6-credit course designation.

Course Activities:

Field activities will include investigation of:

- vertical zonation on rocky shores
- species diversity under differently sized boulders
- infaunal communities of sandy and muddy shores
- overgrowth of sessile invertebrates on floating docks
- species richness of deep-water trawls and surface-water plankton tows

Laboratory exercises will include designing and conducting feeding experiments:

- whelk predation on mussels
- snail and isopod herbivory on different seaweeds

Individual research projects & presentations



<i>Week</i>	<i>Day</i>	<i>Date</i>	<i>Tide Time</i>	<i>Low Tide Level</i>	<i>Lecture & Lab Topics</i>
1	Sun	Jun 20			OIMB Introduction
	Tues	Jun 22	3:18 pm	2.71 ft	Marine ecology: scope, approaches, experiments, paradigms, random sampling, replication, hypothesis testing
	Thurs	Jun 24	5:35 am	-1.26 ft	Tidal patterns: global, regional, and local tides; spatial-temporal variation in emersion; physiological consequences
2	Tues	Jun 29	8:49 am	-0.88 ft	Rocky shores: zonation, major space occupiers, functionally important consumers
	Thurs	Jul 1	9:56 am	0.0 ft	Rocky shores: community structure, species and phyletic richness, species diversity indices



3	Tues	Jul 6	1:27 pm	2.91 ft	Unstable shores: Soft-sediment communities (sand & mud), animal-sediment relations, feeding ecology, biotic vs. abiotic factors
	Thurs	Jul 8	3:36 pm	3.28 ft	Unstable shores: Soft-sediment communities (sand & mud), animal-sediment relations, feeding ecology, biotic vs. abiotic factors
4	Tues	Jul 13	8:02 am	-2.17 ft	Unstable shores: Soft-sediment communities (sand & mud), animal-sediment relations, feeding ecology, biotic vs. abiotic factors
	Thurs	Jul 15	9:26 am	-1.20	Unstable shores: Boulder, cobble, & shingle communities; disturbance





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5	Tues	Jul 20	1:49 pm	2.92 ft	Community structure: Species interactions & community dynamics
	Thurs	Jul 22	4:32 am	-0.6 ft	Settlement & Recruitment: phytoplankton, zooplankton, nekton, benthic-pelagic coupling
6	Tues	Jul 27	7:47 am	-0.78 ft	Subtidal communities: Seagrass meadows
	Thurs	Jul 29	8:48 am	-0.08 ft	Subtidal communities: Seagrass meadows



7	Tues	Aug 3	11:35 am	2.82 ft	Subtidal communities: Kelp forests & beds
	Thurs	Aug 5	1:58 pm	3.48 ft	Large-scale dynamics: Currents, counter-currents, upwelling, down-welling, hypoxia, biological regime changes, inter-decadal patterns, El Niño–Southern Oscillation (ENSO), North Atlantic Oscillation (NAO)
8	Tues	Aug 10	6:55 am	-1.8 ft	Student project presentations
	Thurs	Aug 12	8:16 am	-1.06 ft	Final Exam