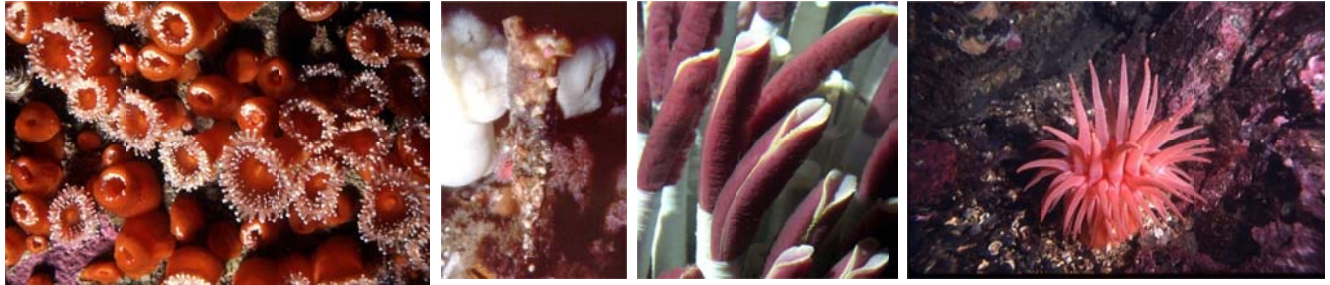


# Subtidal and Deep-Sea Biology

## Biology 457/557

### Spring, 2011



#### Course Description:

This course deals with the ecology of organisms living below the intertidal zone, including offshore reefs, kelp beds, continental slopes, submarine canyons, abyssal plains, seamounts, methane seeps and hydrothermal vents. Emphasizing factors that control animal distribution, diversity and abundance, local field work will feature OIMB's new 600-m Phantom ROV (Remotely Operated Vehicle) as well as conventional over-the-side sampling methods. Student projects will contribute to our understanding of local subtidal ecosystems that have been proposed for protection as part of Oregon's new network of marine reserves.

Instructor: Professor Craig Young

Credit Hours: 4

Place: OIMB Campus

Meeting Day and Time: Friday, 8:30-3:00

Tentative Schedule:

#### ***Week 1.***

Lecture: Introduction to the subtidal zone. Bathymetric features of the world ocean. Overview of subtidal and deep-sea habitats.

Lab & Field Work: Remote methods of sampling soft bottoms. Bay cruise.

#### ***Week 2.***

Lecture: Subtidal soft-bottom assemblages. Parallel bottom communities. Methods of sampling infauna and sediments. Sediment-animal interactions.

Lab & Field Work: Community analysis of soft-bottom assemblages



### **Week 3.**

Lecture: Hard bottoms on the shelf and slope. Ecology of fjords and inlets. Filter-feeding and water flow.

Lab & Field Work: Sampling methods for hard bottoms. Cape Arago cruise. Use of a Remotely Operated Vehicle. Video transect methods.

### **Week 4.**

Lecture: Community ecology on marine rocky bottoms. Predator-prey interactions. Competition for space.

Lab & Field Work: Analysis of overgrowth interactions and competitive networks in an intertidal boulder field.

### **Week 5.**

Lecture: Kelp bed ecology. Plant-animal interactions in the shallow subtidal zone.

Lab & Field Work: Community analysis in kelp holdfasts.

### **Week 6.**

Lecture: Detrital-based ecosystems in the deep sea. Phytodetritus. Fish, whale and wood falls.

**Lab & Field Work:** ROV and dredging cruise. Individual projects.

### **Week 7.**

Lecture: Biology of seamounts, underwater canyons and deep-sea coral reefs.

Lab & Field Work: Use of fusible links and acoustic release technology.

### **Week 8.**

Individual and team projects

### **Week 9.**

Lecture: Deep-sea chemosynthetic ecosystems. Ecology of hydrothermal vents and methane seeps.

Lab: Examination of vent and seep organisms.

### **Week 10.**

Presentation and discussion of student projects. Review for final exam.

Grading:

***Written Project Report:*** 60% of grade

***Oral Project Report:*** 15% of grade

***Final Exam:*** 25% of grade