

## Invertebrate Zoology and Evolution

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2008

**Prerequisites:** Two quarters of college-level general biology or Introduction to Environmental Studies: Natural Resources, Oceans and Global Climate Change.

**Special expenses:** Up to \$175 for overnight field trip; ~\$10 for dissection tools; above average book costs.

**Credit:** 16 credits will be awarded in invertebrate zoology, invertebrate zoology lab, evolution, and microscopy.

This all-level program may be taken for either **16 upper-division-science credits**, for regular credit, or some combination of the two credit taxa. Exact requirements for upper-division science credit will be specified clearly in the full syllabus. These will include more thorough taxonomic and anatomical coverage of organisms in labs, extra/more difficult questions on exams, etc.

This course will examine all the invertebrate phyla with particular regards to functional morphology, phylogeny and ecology. The evolution of invertebrates will be an underlying theme throughout the course, and students will study the science of evolution through text readings and oral presentations. The proximity of TESC to various marine, fresh-water and terrestrial habitats provides excellent opportunities to study many diverse groups of local organisms, and emphasis will be placed on learning the regional invertebrate fauna. Fundamental laboratory and field techniques in zoology will be learned, and students will be required to complete a research project utilizing the available microscopy facilities. A strong commitment to work both in the field and in the lab is necessary to complete this program. Since entomology is taught separately at Evergreen, the Hexapoda will only be examined cursorily.

**NOTE: Students must show up on time to the first class period on April 1<sup>st</sup> or they will be dropped from the program. First Class: 9AM Lab 1 Room 3041.**

**Weekly Schedule** (BEWARE: There will be some substantial additions to these standard times! Technical problems or inclement weather may require major changes.)

Tuesday	Wednesday	Thursday	Friday
Lecture/Lab	Evolution	Lecture/Lab	Lab
9:00 <sup>1</sup> -3:00 <sup>2</sup>	9:00-12:00	9:00 <sup>1</sup> -3:00 <sup>2</sup>	9:00 <sup>1</sup> -12:00 <sup>2</sup>
Lab I 3046	Sem2 A2107	Lab 1 3046	Lab I 3046
<sup>1</sup> or earlier as needed	<sup>2</sup> or later as needed		

### Laboratory

Investigations of organisms from all the major invertebrate phyla will be done in the laboratory. Students will keep a notebook with drawings of their observations and dissections. A minimum number of organisms for observation and dissection will be assigned, and students will be encouraged to complete more detailed observations of other organisms that interest them. Note: students not wishing to undertake dissection should take advantage of an alternative program.

### Field Trips

We will take several field trips to collect and observe animals. Participation on field trips is mandatory. Local field trips will include the Evergreen beach, Budd Inlet, etc. The starting times of field trips may vary substantially according to the tides. Times will be announced in class. Students will need to make their own car pool arrangements for transportation on field trips less than 10 miles. We will observe intertidal organisms on the NW coast of the Olympic Peninsula for 6 days/5 nights during the full moon low tides in May (Week 6: Sunday, 5/4 to Friday, 5/9). We will stay in tents and get up early to observe animals at low tide. You will be billed for this fieldtrip through Student Accounts (x6447). This trip will be "somewhat strenuous".

## Books

These six books are required and 5 of them will be available in the bookstore. There will be some copies of the Kozloff keys and the Nybakken lab manual available for sharing in the lab. Some students might wish to get together to share Lamb (2006) also.

- Brusca, R. C. and G. J. Brusca, 2001. *Invertebrates*, Sinauer Associates ISBN 0878390973  
Ridley, *Evolution*, **Third Edition**, Blackwell ISBN 978-14051-0345-9  
Gould, S. J. (1989). *Wonderful life*, Norton ISBN: 978-0393307009  
Kozloff, E., (1996). *Marine invertebrates of the Pacific Northwest*, Univ. Wash. Press ISBN0295975628  
Nybakken, J., *Diversity of the invertebrates: A laboratory manual, Pacific Coast version* McGraw-Hill ISBN 0697151204 (OUT OF PRINT: find a copy if you can)  
Lamb, A. (2006) *Marine Life of the Pacific Northwest*. Harbour Publishing. ISBN: 978-1550173611

A compact field guide to local marine invertebrates is required. One of these 2 is suggested. There are others also.

- Kozloff, E. 2001. *Seashore life of the northern Pacific coast*, University of Washington Press ISBN 0295960841  
Gotshall, D. 1994. *Guide to marine invertebrates: Alaska to Baja California*. Sea Challengers, Monterey, CA. ISBN 0930118197

Optional Books for those of you with special interests (The first four published by Sea Challengers, Monterey, California)

- Pacific Coast Crabs and Shrimps* 1995. Gregory C. Jensen.  
*Guide To Marine Invertebrates - Alaska To Baja California*, 1994. Daniel W. Gotshall.  
*Pacific Coast Nudibranchs - A Guide to the Opisthobranchs, Alaska to Baja California* (Second Edition Revised). 1991. David W. Behrens.  
*Pacific Coast Pelagic Invertebrates - Alaska to Baja California*, 1998. David Wrobel and Claudia Mills.  
Lambert, P. 1997. *Sea Cucumbers of British Columbia, Southeast Alaska and Puget Sound (Royal British Columbia Museum Handbook)* University of British Columbia Press, Vancouver  
Lambert, P. 2000. *Sea Stars of British Columbia, Southeast Alaska and Puget Sound (Royal British Columbia Museum Handbook)* University of British Columbia Press, Vancouver  
Lambert, P. & WC Austin 2007. *Brittle Stars, Sea Urchins and Feather Stars of British Columbia, Southeast Alaska and Puget Sound (Royal British Columbia Museum Handbook)* University of British Columbia Press, Vancouver ISBN 978-07726-5618-6