

Biology 460-INVERTEBRATE ZOOLOGY
Fall 2009 Syllabus

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Course description:

This course is devoted to the study of invertebrate animals. Invertebrates comprise the majority of animals found on earth and their study is fascinating due to the wide array of forms and adaptations found in these organisms. We will focus on the classification, anatomy, physiology, development and ecology of several phyla.

Course format:

The class will meet for lecture TR 10:00-11:20 and for lab R 1:00-5:00. Lectures are meant to be interactive and I expect you to ask and answer questions, supply examples from other classes or personal experience, and comment on the material being presented. The lecture portion of the class will be organized based on the phylogenetic relationships of the organisms we will be studying. Thus, we will begin with the sponges (Phylum Porifera) and end with the chordates. There will be **two midterms and a final** covering the lecture material. Although the exams are not cumulative, you will need to keep the major evolutionary differences between the phyla in mind throughout the course.

The laboratory will focus on anatomical and functional aspects of invertebrates. Most of the labs will have multiple basic dissections. Before each lab, you are expected to have read the laboratory procedure handout (these will be posted on the Web prior to each experiment). **You will need a lab notebook.** The notebook should be bound with blank (unlined) pages. It will be turned in at the end of the class and will be worth 10% of your grade.

Two of the labs will be experimental in nature and you will conduct a short, guided experiments which has been designed to cover different aspects of invertebrate biology and which is grounded in the primary literature. Each student will turn in a formal lab report for these experiments (one paper for the two experiments...they are related). You may consult your group members on results and interpretations, **but each student should write their own report.** The format of the report should follow that of a published research paper in a biological journal such as *Physiological Zoology* or *Journal of Comparative Physiology*. You should also consult "Tips for Writing Papers" posted on our web site. Papers from the primary literature will be available for this lab and they will comprise the beginning of your literature cited section.

Optional Field Trip

There will be an **optional overnight field trip to the Vancouver Aquarium** on Oct. 16-17. We arrive at the aquarium at 9:00 pm. The aquarium staff will give us a tour of the research facilities, a short talk by their dive master (he photographs for National Geographic), and we'll get to experiment in the wet labs. We also get to **sleep with the Belugas** (OK...I know they aren't invertebrates but we'll make the exception). The next morning we have the aquarium to ourselves until 9 am when they open. You will need to carpool to the aquarium and the cost will be \$69 Cdn (I'll figure out what that is in US dollars closer to the trip). **You will need a passport for this trip.**

Required Text:

Brusca, R.C. and G.J. Brusca. (2003) *Invertebrates*, 2nd ed. Sinauer Associates Inc., Sunderland, Mass.

Evaluation:

Lecture exams:

First Midterm (Thursday Oct. 15)	20%
Second Midterm (Thursday Nov. 5)	20%
Final (Tuesday Dec. 8 8:00-10:00)	20%

Laboratory

Lab Notebook	10%
Crab/Snail paper	15%
Lab Practical (Tuesday Dec. 9 8:00-10:00)	15%

Grading scale:

94% or greater: A	78-81%: B-	66-68%: D+
89-93%: A-	75-77%: C+	63-65%: D
86-88%: B+	72-74%: C	60-62%: D-
82-85%: B	69-71%: C-	below 60%: F

Lecture Topics, Reading Assignments, & Labs:

Below is a tentative schedule of lecture and lab topics.

Week	Lecture	Lab
Week 1 (Sept. 24)	<i>Topics:</i> Introduction, Phylogenetics, Development and Life Histories <i>Readings:</i> Ch. 4; Review Ch. 2 for basic concepts of evolution and Ch. 3 for animal physiology, if needed.	
Week 2 (Sept. 29, Oct. 1)	<i>Topics:</i> Porifera, Cnidaria <i>Readings:</i> Ch. 6, 8	Microscope Use, Plankton, & Sponges
Week 3 (Oct. 6, 8)	<i>Topics:</i> Cnidaria, Ctenophora <i>Readings:</i> Ch. 8, 9	Cnidarians & Ctenophores
Week 4 (Oct. 13, 15) Oct. 16	<i>Topics:</i> Platyhelminthes, Nemertea <i>Readings:</i> Ch. 10, 11 Midterm 1 (Oct. 15) Optional overnight field trip to Vancouver Aquarium	Snail part of the experimental lab
Week 5 (Oct. 20, 22)	<i>Topics:</i> Rotifera, Nemata <i>Readings:</i> Ch. 12 pp. 338-345, 351-362; Ch. 13	Platyhelminthes, Nemertean, & Rotifers
Week 6 (Oct. 27, 29)	<i>Topics:</i> Annelida <i>Readings:</i> Ch. 14	Annelids & Nematodes
Week 7 (Nov. 3, 5)	<i>Topics:</i> Arthropoda Midterm 2 (Nov. 5) <i>Readings:</i> Ch. 15 pp. 475-497; Ch. 16, 17, 18, 19	Crab part of the experimental lab
Week 8 (Nov. 10, 12)	<i>Topics:</i> Arthropoda, Mollusca <i>Readings:</i> Ch. 20	Arthropods
Week 9 (Nov. 17, 19)	<i>Topics:</i> Mollusca, Lophophorates <i>Readings:</i> Ch. 21, 22	Molluscs & Lophophorates
Week 10 (Nov. 24)	<i>Topics:</i> Echinodermata, <i>Readings:</i> Ch. 22, 23	No lab – Thanksgiving Holiday
Week 11 (Dec. 1, 3)	<i>Topics:</i> Echinodermata, Chordata <i>Readings:</i> Ch. 22, 23	Echinoderms & Chordates
	Final Exam Tuesday Dec. 8, 8-10 Lab Practical Tuesday Dec. 8, 1-3	