

BIOSCI 381 – INVERTEBRATE ZOOLOGY – KNIPES Fall 2009

Lecture – MWF 10:30 – 11:20 am, Manter 427

Lab – W 3:30- 6:20 pm, Manter 427

Instructors : Lecture - Elaine Knipes, Manter 426, laine244@yahoo.com

Lab – Bill Lawyer, Manter 426, wlawyer@huskers.unl.edu

Textbook: Brusca and Brusca, Invertebrates, 2nd edition. Sinauer & Associates 2003

Course Webpage: <http://www.elaineknipes.com/teaching/BIOS3812009.htm>



Approach: The objective of this course is to increase your exposure to, and understanding of, the immense diversity of invertebrate organisms. In order to accomplish this we will: (1) cover the major taxonomic groups, from tiny protists to large arthropods and molluscs; (2) explore the primary literature; and (3) encounter as many different invertebrate organisms as possible in nature and in the laboratory.

The lab for this course is designed around the central idea that “the handling and study of live material is a truly important educational experience”. Therefore lab will consist of local field trips to collect aquatic invertebrates, an exercise with a living kelp holdfast shipment from Baja California, and trips to the Morrill Hall Museum and Omaha’s Henry Doorly Zoo.

Learning outcomes: By the end of the semester, you should be able to do the following:

- a. Recognize the major animal phyla and classes, name them using the proper noun taxonomic names, and tell their phylum and class characters.
- b. Explain the invertebrate portion of a food web in a local pond.
- c. Dissect a series of representative invertebrates from the common phyla and classes, and correctly identify the major anatomical features.
- d. Use dichotomous keys to identify various invertebrates to lower taxonomic levels such as family and genus.
- e. Use the primary literature in invertebrate zoology and explain this literature to an audience of peers.

Materials: A 3-ringed binder and a fine-lead pencil. We also are planning some field trips, so if you have waders or shoes and clothes that you don’t mind getting a little wet, that would be great; if not, don’t worry about it.

Office Hours: You may call me at any time. I will open up the lab for you and you are free to use the lab provided an instructor is nearby.

Grading policy: The grading policy in this class allows you a great deal of flexibility in building your grade and hopefully encourages you to do independent work. My approach to grading is to make the testing part of the course as painless as possible, to give you credit for actually doing certain kinds of work that I know will teach you about invertebrates, and to let you select some things from the vast amount of material available. Your final grade will be based on the following items:

- a. Attendance is required and will be worth **10%** of your grade.
- b. Weekly Quiz: Every Friday beginning with the first week we will have a quiz at the start of the period. These quizzes are short answer (five questions, each answered with complete sentences) and should take no more than 15 minutes. Quiz average is **25%** of your grade.
- c. Presentations: After the quiz on Friday, two students will make presentations of papers from the primary (journal) literature. You should expect to do two of these presentations during the semester and get class feedback on each. If you do your two presentations as outlined below, then I will give you full credit for that **25%** of your grade. (Guidelines attached).
- d. Lab: Work from lab is worth **40%** of your letter grade. Lab grades are based on a notebook, a weekly quiz beginning with the second week, two lab practical exams, and attendance.

Lab notebooks consist of the work as indicated below for each lab. In some cases there will be field notes, drawings, and for most of the labs there will be a specific set of observations to make and problems for you to do. Notebooks will be checked and graded two times during the semester (TA will give you the schedule). The quizzes will be based on the previous week's lab. Bring your textbook to lab. The field trip to the Omaha zoo will take place on a Sunday morning, probably in middle of November, and this field trip will take the place of one of the Wednesday labs.

*****There is no need to buy a loose-leaf notebook binder unless you just want a new one; I already have several that are available from other classes.*****

ADA information: Students with disabilities are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 472-3787 voice or TTY.

STUDENT PRESENTATION GUIDELINES

(1) Choose an article that interests you, about **a research development that you feel should be covered in the next edition of the Invertebrate textbook by Brusca & Brusca**. Choose the article from one of the journals listed below. All are available online through the IRIS, although not all have full text for all the years published. You will have to browse the tables of contents to find an article that interests you and that you believe will be of interest to the class.

Invertebrate Biology

Marine Biology

Hydrobiologia

Crustaceana

Transactions of the American Microscopical Society

Journal of Eukaryotic Microbiology

Marine Ecology Progress Series

(2) Prepare a PowerPoint show on the article, telling the (i.) title, (ii.) authors, (iii.) where the work was done, (iv.) the big idea behind the research, (v.) the hypotheses tested and methods or approaches to testing them, (vi.) the general results, (vii.) how the authors interpreted their results, and (viii.) your personal assessment of the research.

(3) The title of the article, along with the complete reference, should be posted on the Discussion Board forum set up on Blackboard for this purpose by Wednesday before you are to give the presentation. Also attach a copy of the article itself on the Discussion Forum. An example of a complete reference is given below (and I've also put it up on Blackboard, in the Discussion Board forum as you would do, along with the pdf version.)

Muller-Parker, G., and S. K. Davy. 2001. Temperate and tropical algal-sea anemone symbioses. *Invertebrate Biology*, **120**:104-123.

(4) Provide the presenter with some written feedback that will help him/her improve the next time.

LECTURE/LAB SCHEDULE – BIOS381 – FALL 2009:

(lecture topics may be modified)

August 24	Lecture 1	Introduction and Course Information (Ch 1 & 2)
August 26	Lecture 2	Introduction to the Invertebrates (Ch 2 & 3)
	LAB 1	Comparative Study of Body Plans: I & Set up Infusion cultures
August 28	Q & Lecture 3	QUIZ ONE; Introduction to the Invertebrates (Ch 3)
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August 31	Lecture 4	Animal Development, Life Histories and Origins (Ch 4)
Sept. 2	Lecture 5	Protists I (Ch 5)
	LAB 2	Comparative Study of Body Plans: II
Sept. 4	NO CLASS	
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Sept. 7	NO CLASS	
Sept. 9	Lecture 6	Protista II (Ch 5)
	LAB 3	Protistan Diversity
Sept. 11	Q2 & P	QUIZ TWO; Student Presentations 1 & 2
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Sept. 14	Lecture 7	Ph. Porifera (Ch 6)
Sept. 16	Lecture 8	Ph. Cnidaria (Ch 8)
	LAB 4	Field trip: Collection at Middle Creek
Sept. 18	Q3 & P	QUIZ THREE; Student Presentations 3 & 4
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Sept. 21	Lecture 8	Ph. Cnidaria (cont.)
Sept. 23	Lecture 9	Ph. Platyhelminthes – Introduction (Ch 10)
	LAB 5	Parasites of Fishes
Sept. 25	Q4 & P	QUIZ FOUR; Student Presentations 5 & 6
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Sept. 28	Lecture 10	Ph. Platyhelminthes – Parasitic (Terry Haverkost) (Ch 12)
Sept. 30	Lecture 11	Blastocoelomates – Ph. Rotifer & Ph. Gastrotricha (Ch 12)
	LAB 6	Infusion Cultures – “Succession in a Jar”
Oct. 2	Q5 & P	QUIZ FIVE; Student Presentations 7 & 8
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Oct. 5	Lecture 12	Ph. Blastocoelomates – Ph. Acanthocephala & Entoprocta (Ch 12)
Oct. 7	Lecture 13	Ph. Blastocoelomates – Ph. Nemata (Ch 12)
	LAB 7	Field trip: Collection at Holmes Lake
Oct. 9	Q6 & P	QUIZ SIX; Student Presentations 9 & 10

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Oct. 12	Lecture 14	“Proto-arthropods” – Ph. Onychophora & Ph. Tardigrada (Ch 15)
Oct. 14	Lecture 15	Ph. Annelida (Ch 14)
Oct. 16	LAB Q7 & P	EXAM I – NOTEBOOKS DUE QUIZ SEVEN; Student Presentations 11 & 12
Oct. 19	NO CLASS	
Oct. 21	Lecture 16	Ph. Mollusca (Ch 20)
Oct. 23	LAB 8 Q8 & P	Intestinal Parasites of Ducks! QUIZ EIGHT; Student Presentations 13 & 14
Oct. 26	Lecture 17	Molluscan diversity (Ch 20)
Oct. 28	Lecture 18	Janovy Lecture on Monterey Bay Kelp
Oct. 30	LAB 9 Q9 & P	Kelp holdfast: Polychaetes. QUIZ NINE, Student Presentations 15 & 16
Nov. 2	Lecture 19	Ph. Sipuncula and Ph. Arthropoda – Crustacea (Ch 16)
Nov. 4	Lecture 20	Ph. Arthropoda – Crustacea (Ch 16)
Nov. 6	LAB 10	Kelp holdfast: Mollusca.
Nov 8	Lecture 21 LAB 11	Amphibian Parasite lifecycles & host specificity (G. Langford) SUNDAY Field Trip: Henry Doorly Zoo, Omaha, NE.
Nov. 9	Q10 & P	QUIZ TEN, Student Presentations
Nov. 11	Lecture 22	Ph. Arthropoda – Cheliceriformes (Ch 19)
Nov. 13	LAB Q11 & P	NO LAB QUIZ ELEVEN, Student Presentations 19 & 20
Nov. 16	Lecture 23	Spider Communication & Behavior (Dustin Wilgers)
Nov. 18	Lecture 24	Ph. Arthropoda – Myriapoda (Ch 18)
Nov. 20	LAB 12 Q12 & P	Field Trip: University of Nebraska State Museum QUIZ TWELVE, Student Presentations 21 & 22
Nov. 23	Lecture 25	Ph. Echinodermata (Ch 22)
Nov. 25	NO CLASS	
Nov. 27	NO LAB NO CLASS	

LECTURE/LAB SCHEDULE – BIOS381 – FALL 2009:

Nov. 30	Lecture 26	Plant/Insect Interactions (Natalie West)
Dec. 2	Lecture 27 LAB 13	Insects (Laura Campbell) Phylum Echinodermata.
Dec. 4	Q13 & P	QUIZ THIRTEEN, Student Presentations 23 & 24
Dec. 7	Lecture 28	Insect Ecology (Laura Beckers)
Dec. 9	Lecture 29 LAB	Cricket Biology (Chandreyee Mitra) LAB FINAL EXAM – NOTEBOOKS DUE
Dec. 11	Q14 & P	QUIZ FOURTEEN, Student Presentations 25 & 26