

**Syllabus: INVERTEBRATE ZOOLOGY
Fall 2007**

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Office Hours: M, W, F: 1:30-2:50

I will be in my office or research lab at these times and available to help you in any way that I can. Feel free to make an appointment to meet with me at other times or come on in if my office door is open.

REQUIRED TEXT: *Invertebrates*, 2nd edition, by Brusca & Brusca

OTHER SUPPLIES:

A three-ring binder (2-3" thick), **tabbed dividers**.
Unlined paper, pencil, and eraser.

GENERAL INTRODUCTION:

This class has several overarching goals: (a) to help you comprehend the incredible diversity and importance of invertebrate animals in the world, especially aquatic invertebrates, (b) to help you become a more proficient biologist, and (c) to open, or further open, your eyes to the natural history heritage of northeastern Missouri. We will do this by studying particular species of invertebrates as representatives of larger invertebrate groups. As far as possible, we will work with live animals, locally collected. A few labs will involve live marine creatures received by express mail from specimen-supply companies, and in some labs we will study preserved animals that are difficult to collect or impossible to keep alive in the laboratory. We will also take some field trips so that we can search out invertebrates in the wilds.

You should probably think of this class as an *introduction* to invertebrate zoology and to the invertebrate world. Best to admit it right now: we cannot cover *all* of "invertebrate zoology" this semester. But, by the end of the course, I hope that you understand what invertebrates and invertebrate zoology are all about.

Invertebrate zoology touches on almost everything in biology. Many sub-disciplines of modern biology are historical off-shoots of invertebrate zoology and discoveries in those fields rightly become a part of invertebrate zoology. For example, the fruit fly *Drosophila*, which is so important to genetics, is an invertebrate and T.H. Morgan—the most famous of the original *Drosophila* geneticists—was an invertebrate zoologist. Likewise, E.O. Wilson, one of the most important ecologists and ethologists of our time, gained many of his insights by studying ants.

Part of the challenge for anyone interested in invertebrate zoology as a career is that it no longer is a single distinct sub-discipline of biology. The Smithsonian Institution has a Division of Invertebrate Zoology, but the National Science Foundation does not. The latter agency doles out federal research dollars and thereby guides the direction of much of the biological research conducted in the United States. Much federally funded research involves invertebrates, but this occurs in the name of "genetics" or "parasitology" or "ecology," rather than "invertebrate zoology!"

COURSE GOALS:

1. Learn to recognize common and important invertebrates. This will be accomplished by learning to see the distinguishing anatomical features of major groups of invertebrates.
2. Learn how the form of an invertebrate relates to its biology. We will study habitats, feeding mechanisms, functional morphology of body parts, reproductive biology, etc. Knowing this information will enable you to predict the ecological role of any species of invertebrate that you may encounter anywhere in the world.
3. Vastly improve your observational skills. In virtually every class, you will be looking closely at live animals to discover for yourself how their bodies operate.
4. Learn how to identify mystery animals by using dichotomous keys. You will help expand knowledge of local invertebrates by helping to identify creatures collected from local aquatic environments.
5. Learn about the multitudinous ways that invertebrates are important in the biosphere.
6. Learn about the questions being investigated by professional invertebrate zoologists. Learn how to discover and seek answers to your own questions about invertebrates, through direct observation and searching the literature..
7. Learn methods for collecting, observing, and keeping invertebrates alive in the lab.

DAY-TO-DAY OPERATION OF COURSE & EXPECTATIONS:

- * You can expect me to come to each class well-prepared and with enthusiasm; to return quizzes and exams within one week; and to treat you and grade you fairly. I hope that you will tell me (e.g., anonymously) if you feel that these expectations are not being met!
- * Be flexible. Occasionally, scheduled laboratory activities may have to be changed at the last moment due to unpredictable events. For example: bad weather may delay arrival of marine organisms shipped in from the coast or force us to re-schedule field trips. Sometimes, creatures obtained for labs may inexplicably die before we get to them., etc.
- * You should attend all class meetings. It is virtually impossible to make up missed labs because many organisms that we will study cannot be kept alive in the lab for long periods of time. You are responsible for all information and assignments given during all class meetings and for keeping informed of announced changes to the schedules (e.g., changes in exam times if this becomes necessary; upcoming quizzes; due dates for assignments, etc.).
- * Class meets for three hours twice a week. Commonly, the first hour of each class meeting will consist of lecture, discussion, student presentations, etc.; the remaining two hours will usually be devoted to laboratory-style study of organisms. Some entire classes may be devoted to field trips or exams.

- * Accomplish assignments on time. It is important that you read lab handouts and relevant parts of the textbook *prior* to coming to class; these will contain lots of very useful information that you will be expected to know and that may not be covered explicitly during lectures. In designing my introductory presentations for labs, I will assume you have read pre-assigned parts of the text. For example, prior to performing any dissection, you should already have certain expectations about what you should look for.
- * Bring your textbook to every class meeting. It contains many illustrations that you will want to refer to during class.
- * To do well in invertebrate zoology, you will probably need to spend some extra time in the lab studying available specimens. You can check out keys from me for letting yourself into the room and into the microscope cabinets. When you are finished studying, you will need to (1) lock the cabinets and the room and (2) immediately return the keys to beneath my office door. If you pass the keys on to another invertebrate zoology student, be sure to record their name and to deputize them to be responsible for locking up and returning the keys to beneath my office door.
- * **ACADEMIC INTEGRITY** is the standard set for this course; academic dishonesty in any form will not be tolerated. I also expect you to be honest in your interactions with me.

Unless otherwise specified, you are expected to work alone on exams and quizzes without the use of any outside resources. For example, you cannot look at other student's tests, nor talk about the test with other students, nor use cheat sheets of any sort.

You are expected to complete all written assignments using your own original words and ideas or to properly quote and cite the words and ideas of others.

If these expectations are not upheld, the Dean of Student Affairs Office and the Vice President for Academic Affairs will be notified. For clarification of the Truman conduct code and penalties consult the *General/Graduate Catalog*. If you become aware of any acts of academic misconduct I urge you bring them to my attention.

TESTS AND ASSIGNMENTS:

Exams:	4 X 75 pts	300 pts
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A combined lecture/lab exam will be given every 3 weeks. These will be worth 75 points each and will emphasize material covered since the previous quiz. I may also give 10 point quizzes at shorter intervals.

Laboratory Notebook:	Periodic assessments	200 pts
	Final notebook assessment	100 pts

Keep a laboratory notebook. This will emphasize your observations of actual specimens studied during the semester. *One goal of the notebooks is to encourage you to work through lab exercises carefully; another is to give you credit for time that you spend examining specimens outside of scheduled class times. Hence, full points (over 89%) can be achieved only if your notebook includes observations of organisms and/or thoughtful reflections on laboratory experiences made outside of regular class hours!* A person scoring Bs on tests must do outside lab work to compensate, if they want to average above 90% on these two parts of the class. On the other hand, a person getting Cs on tests can average above 80% if their regular lab work is of high quality.

Notebooks should never include illustrations that you have redrawn from other sources to make them look like your own.

I will collect and assess portions of your notebook at regular intervals. This will allow you to continuously accrue points throughout the semester and, optimally, will foster communication between us about your work.

The final notebook assessment ensures that you will organize all of the work you do throughout the semester, give extra credit for exceptional work, and ensure that you of all The final notebook assessment grade *may* include a "notebook interview."

Synopsis of a local species:	75 pts
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Create an "entry" about a local species into the "class book" about local aquatic invertebrates: *Aquatic Natural History Heritage of Northern Missouri*.

Modern Invertebrate Zoologist Report:	75 pts
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Conduct a literature search, write a report, and give an oral presentation to the class about a biologist that is currently actively studying some area of invertebrate zoology that is of interest to you.

SEMESTER TOTAL	750 pts
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FINAL GRADES will be assigned according to the following scale:

A: 90% + B: 80-89.5% C: 65-79.5% D: 55-64.5% F: 0-54.5%