

# BIOL 226 — Animal Structure and Diversity

Spring 2016

## *Lecture*

Where: Olmsted Hall 273

When: TR 10:30am–11:45am

## *Lab*

Where: Olmsted Hall 256

When: M/T 1:30pm–5:30pm

Professor: Dr. Justin Touchon

Office: Olmsted 163.1

Email: [jutouchon@vassar.edu](mailto:jutouchon@vassar.edu)

Phone: x7419

Office hours: after lecture R until 2:00pm  
(or by appointment)

***Email is the best way to contact me and I will try to respond promptly.***

***Do not expect a response before 9am, after 5pm, or on weekends (although it may happen).***

## **Laboratory Interns:**

**Monday lab:** Rachel Marklyn ([ramarklyn@vassar.edu](mailto:ramarklyn@vassar.edu))

**Tuesday lab:** Tim Boycott ([tiboycott@vassar.edu](mailto:tiboycott@vassar.edu))

## **Overview**

This course is much more than just a survey of the animal phyla. Think about the incredible diversity of animal forms, from simple sponges to complex vertebrates! To fully understand such diversity, we will discuss how animal forms have evolved in response to the environment and how their ability to evolve as a consequence of their own evolutionary history. A focus of this course will be on animal development – the concept that there are genes with very large effects on animal form, which are nearly identical across much of the animal kingdom, from fruit flies to humans. With this foundation, we can begin to explain how animal diversity has evolved into the forms we see today and understand the evolutionary relationships among major animal phyla and classes. *By the end of the semester you will appreciate not only the tremendous differences across the animal kingdom, but more importantly, the amazing similarities!*

In laboratory, you will observe and sometimes handle live animals, noting their form and their behavior. You will dissect preserved animals and compare external and internal anatomy among animal groups. A large part of your final grade will be based on your laboratory notebook, in which you should keep detailed descriptions and drawings of the animals. Dissections make some students uncomfortable for a variety of reasons. Although I respect students' opinions and welcome discussion during office hours, dissections are necessary for this course.

Please let me know if you have **allergies** to latex (in the gloves that we'll use), to shellfish (which we will study in lab), or any other potential allergen that we might encounter in laboratory.

## **Textbooks (required):**

- 1) Hickman, C.P., Roberts, L.S., Keen, S.L., Larson, A., Eisenhour, D.J. (2014) Animal Diversity (7th edition). McGraw-Hill, New York
- 2) Shubin, N. (2009). Your Inner Fish. Vintage Books, New York.

**Supplemental articles:** There may also be primary research articles assigned throughout the semester, which will be made available through our Moodle site.

## REVISED Schedule

Date	Lecture	Reading	Lab
Jan. 28	Intro to Studying Animals	Ch. 1	No lab
Feb. 2	Multicellularity & Animal Origins	Ch. 3	Lab 1. Animal Architecture + Porifera
Feb. 4	Cnidaria & Ctenophora	Ch. 6	
Feb. 9	Lophotrochozoa	Ch. 7	Lab 2. Cnidaria + Worms
Feb. 11	No lecture, sick <b>Quiz</b>	Ch. 8	
Feb. 16	Lophotrochozoa	Ch. 11, 12 (pgs. 232-239 only)	Lab 3. Mollusca
Feb. 18	Mollusca	Ch.10	
Feb. 23	Ecdysozoa	Ch. 12	Lab 4. Arthropoda I
Feb. 25	Arthropoda <b>Quiz</b>		
March 1	Arthropoda	Ch. 13	Lab 5. Arthropoda II
March 3	Arthropoda	Ch. 13	
March 8	Arthropoda	Ch. 13	<b>Lab Practical I</b>
March 10	<b>Midterm Exam</b>		
<b>Spring Break</b>			
March 29	Deuterostomes/Echinoderms	Ch. 14	Lab 6. Echinodermata
March 31	Early Chordates	Ch. 15; <i>Your Inner Fish</i> Ch. 1-4	
April 5	Fish	Ch. 16	Lab 7. Basal Chordates
April 7	Fish <b>Quiz</b>	Ch. 16; <i>Your Inner Fish</i> Ch. 5-7	
April 12	Amphibians	Ch. 17	Lab 8. Field Trip – Trevor Zoo/or TBD
April 14	Amphibians	Ch. 17; <i>Your Inner Fish</i> Ch. 8-11	
April 19	<i>Your Inner Fish</i> discussion	Your Inner Fish	Lab 9. Vertebrates
April 21	Reptiles <b>Quiz</b>	Ch. 18	
April 26	Reptiles	Ch. 18	Lab 10. Presentations
April 28	Birds	Ch. 19	
May 3	Birds	Ch. 19	<b>Lab Practical Exam II</b>
May 5	Mammals	Ch. 20	
May 10	Mammals	Ch. 20	<b>Course Evaluations</b>

**NOTE: *Your Inner Fish* readings are for the weekend and involve a homework assignment due at midnight on Sunday night on Moodle.**

**Grading:**

Quizzes (4 total, 2.5% each)	10%
Homework Assignments	5%
Lab Notebook	20%
Lab Practical Exams	20%
Midterm Exam	15%
Final Exam (cumulative)	15%
Final lab presentation	10%
Participation (attendance and discussion)	5%

**Grading System:**

Percentage Points	Final Grade		
100–94	A	79.9–77	C+
93.9–90	A-	76.9–72	C
89.9–87	B+	71.9–70	C-
86.9–83	B	69.9–67	D+
82.9–80	B-	66.9–60	D
		59.9 and below	F

**Grade definitions**

**A** indicates achievement of distinction. It involves conspicuous excellence in several aspects of the work.

**B** indicates general achievement of a high order. It also involves excellence in some aspects of the work, such as the following:

- Completeness and accuracy of knowledge
- Sustained and effective use of knowledge
- Independence of work
- Originality

**C** indicates the acceptable standard for graduation from Vassar College. It involves in each course such work as may fairly be expected of any Vassar student of normal ability who gives to the course a reasonable amount of time, effort, and attention. Such acceptable attainment should include the following factors:

- Familiarity with the content of the course
- Familiarity with the methods of study of the course
- Evidence of growth in actual use both of content and method
- Full participation in the work of the class
- Evidence of an open, active, and discriminating mind
- Ability to express oneself in intelligible English

**C–, D+, and D** indicate degrees of unsatisfactory work, below standard grade. They signify work which in one or more important respects falls below the minimum acceptable standard for graduation, but which is of sufficient quality and quantity to be counted in the units required for graduation. Work evaluated as **F** may not be counted towards the degree.

**Late assignments:**

It always benefits you to turn in assignments, even if they are very late. Your answers on assignments allow us to gauge your understanding of concepts before being tested so we can help if needed. **There is a 5% penalty per day for late assignments**, with a maximum penalty of 50%. Any homework assignments will be turned in on Moodle.

**Lab Notebooks:** You will need to buy a laboratory notebook. I prefer you have a composition notebook but a binder or spiral bound notebook work as well. The lab notebooks in this class constitute **20%** of your final grade, which is substantial. The lab notebook should have **detailed** descriptions of the animals you have observed and dissected, drawings of the animals, any data collected, and answers to all questions in the laboratory handouts. You may need to **refer to your textbook** to answer questions in each week's handouts.

Notebooks will be graded twice, halfway through the semester and at the end. More details will be given during the first lab session.

**Attendance:** Attendance in every class is important. Attendance in every lab is **crucial**. In some classes, we will have discussions, which cannot be made up later. **Missing class will only be permissible if you have an official excuse** from the Dean of Studies office or Health Services. I always appreciate an email if you are going to miss class and anticipate having an official excuse after the fact. If there are religious holidays that fall during our class times, please let me know as early as possible that you will miss class and I can help you make up anything you have missed. If attendance becomes poor, you will be contacted by the Dean of Studies office.

**Academic accommodations** are available for students who are registered with the Office of Accessibility and Educational Opportunity. Students in need of disability accommodations should schedule an appointment with me *early* in the semester to discuss any accommodations for this course that have been approved by Office of Accessibility and Educational Opportunity.

**Gender pronouns:** If you prefer to use gender neutral or other alternative pronouns, please feel free to let me know. Similarly, if you prefer to be called by a name other than what is given to me by the college, just let me know.

### **A word about academic integrity**

You will be working closely with a lab partner all semester. Furthermore, discussion of homework assignments with your classmates is encouraged! However, it is *extremely important* that all work (your lab notebook, any homework assignments, etc.) be your own. All work should be in your own words and should elaborate on your own ideas. *Even if unintentional, plagiarism is a very serious offense.*

*The following information is from the Vassar Student Handbook:*

#### **Integrity of Academic Work**

The Vassar degree should represent not only a high quality of intellectual achievement but also the performance of all work in the pursuit of that achievement in accordance with the highest standards of academic honesty and integrity. The basic principles inherent in such honesty and integrity are as follows:

1. Each student's work shall be the product of the student's own effort.
2. Each student shall give due and appropriate acknowledgment of the work of others when that work is incorporated into the writing of papers.
3. No student shall infringe upon the rights of others to have fair and equal access to library or other academic resources.
4. No student shall submit the same work to more than one instructor without prior approval of the instructor involved.
5. In accordance with these principles the following regulations have been set up concerning:

#### ***B. Plagiarism***

Any form of plagiarism violates the integrity of the student's work. In cases of doubt, students should ask instructors, and instructors are requested to be definite and explicit in explaining the proper procedure for the work involved.

The following are, however, general rules which apply in all cases:

1. Quotations must be clearly marked and sources of information or of an idea or opinion not the student's own must be indicated clearly on all written work, including examinations. This applies to paraphrased ideas as well as direct quotations.
2. Unless otherwise directed, every student working in a laboratory is expected to make all necessary measurements, drawings, etc., independently, from his or her own observations of the material provided. All records, including numerical data for working out results, are to be used by the student independently and as initially recorded. Unless otherwise indicated, all laboratory materials are to be kept in the laboratory.
3. Collaboration in preparation of written work may take place only to the extent approved by the instructor. This applies to prepared examination.