Biology 160, Animal Biology, Fall 2012

Course overview

Faculty	Peter Zani, Ph.D.
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Office hours	11:00-11:45 MTWRF, if the door is open, or by appointment

Course description

This course introduces you to the basic principles animals & explores the diversity of different life forms. We will explore the unity & diversity of animal life on Earth, its evolutionary change & diversification through time, as well as structure–function relationships within organisms. You will specifically learn about biological chemistry, the different types of living things, what science is (and is not), & the basics of evolution. This is a fast-paced course (don't fall behind).

Course goals

Instill an appreciation of the diversity of life on Earth including the levels & types of diversity, as well as the characteristics & functioning of the major groups.

Develop your ability to apply the scientific method to the study of life on Earth & your understanding of how biologists go about studying biological diversity.

Course readings

Readings will be primarily from the required textbook Integrated Principles of Zoology 15th ed. by Hickman et al. There may also be supplementary materials provided as needed. You are expected to read the assigned pages prior to lecture & then review those pages again after class.

Course evaluation:

Your grade in this course will be based on the following components totaling 1100 pts:

Participation	Assignments	Quizzes	Lab exams (3)	Exams (3)	Final exam
100	100	100	300 (100 ea.)	300 (100 ea.)	200

Attendance / Participation

Class attendance is expected (yes, you are required to come to class and lab). In addition, participation in class and lab are expected, including answering questions posed in class, asking questions, & participating in classroom and lab discussions. Roughly half of these points will be awarded for lecture and lab.

Assignments

In-class or homework assignments will focus on current topics & should help you practice solving problems, reinforce material, & prepare for exams. Assignments are due *AT THE BEGINNING OF CLASS* on the appointed day (unless otherwise noted on the course schedule). Late assignments will lose 10% each day (including the day they are due [thus, assignments turned in at the END of class are "late"]) that they are late (that is, something turned in late loses 10% the first 24h, 20% the second 24h, etc). There will be no make-up work unless the absence was excused and/or documented. There is no extra credit planned at this time.

Quizzes

There will be a 10-point quiz most weeks in class. The only exceptions are weeks during which we have an exam scheduled. If there are more than 10 quizzes the lowest grade(s) will be dropped.

Term Exams

There will be three exams at roughly equal intervals. These exams will not be comprehensive, though the material does build throughout this semester. Exam questions will be similar to quiz questions & will consist of multiple-choice, short-answer, and a few longer essay-type questions.

Final Exam

The final exam will be similar to other exams (see above), but will be *comprehensive* with roughly half the exam covering the first three quarters of the semester and one half covering the last quarter.

Final Grades

Your final grade is based on the percentage of points that you earn.

$\geq$93% = A, $\geq$90% = A–, $\geq$87% = B+, $\geq$83% = B, $\geq$80% = B–, $\geq$77% = C+, $\geq$73% = C, $\geq$70% = C–, $\geq$67% = D+, $\geq$60% = D, <60% = F

In-Class Behavior

You are expected to be respectful & considerate of your fellow students' learning environment. In addition, you are expected to focus on the topics of the day in lectures. Thus, certain electronic devices are considered by me to be distractions & not allowed in the classroom. Primary among these are cell phones & computers. *All cell phones* are to be silenced & put away during class. No texting, no calls, no exceptions (I may not say anything at the time, but you should expect your participation grade to be affected negatively if you violate these guidelines). Unless you have a documented learning disability that requires a laptop to take notes, there are to be no computers during lectures. During lectures we may engage in periodic discussions of relevant issues. You are not required to *agree* with every opinion expressed by me or your peers; in fact, healthy skepticism is to be expected of any good scientist. However, you should respect the right of others to hold different opinions & perhaps even learn from their viewpoints. You are expected and encouraged to ask questions & participate in discussions where appropriate (remember part of your grade depends on class participation).

Academic Honesty

Plagiarism and cheating of any form are serious offenses and may result in an F for the assignment, the course, or expulsion from the university. The details of the UWSP Academic Integrity policy are found in the Student Handbook. It is your responsibility to read and understand the contents of that policy before you submit work to be graded. Questions regarding the policies and enforcement of the policies may be addressed to me during office hours.

Notification of Participation in College Sanctioned Events

Individuals who must miss a class to participate in a college-sanctioned event are expected to notify me in advance and complete the work, including tests, in advance. It is your responsibility to communicate with me in advance regarding absences and determine a schedule for make-up work.

Concerning Disabilities

UWSP abides by interpretations of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973 that stipulates no student shall be denied the benefits of an education "solely by reason of a handicap." Disabilities covered by law include, but are not limited to, learning disabilities, hearing, sight, or mobility impairments, and other health related impairments. If you have a documented disability that may have some impact on your work in this class for which you may require accommodations, please see me during the first two weeks of the semester so that such accommodations may be arranged.

Studying Strategies

Each individual has their own set of learning techniques, but the following may help you create a strategy in this class.

- **Keep up with the material**. Read the assigned chapters prior to coming to class, but do not spend hours reading, taking notes and highlighting. At a minimum, skim the chapter and read the review material at the end of each chapter before coming to class. You might want to bring your textbooks to class, but this is not required. Often, figures in the text will be used in lecture. I will try to let you know which figures these are. DO NOT wait until the weekend before the exam to start studying for this class. *At very least* you should review your notes for each lecture for about 10 minutes within 24 hours of class. Doing so means you are studying the entire time and not trying to shove all the info into your brain at the last minute.

- **Review and rewrite your notes**. I think this is especially important to do within about 24 hours to turn short-term memory into long-term memory. However, do not simply rewrite your notes word for word as this will not be as useful for learning the material. Try to put things in your own words with additions that you might get from the readings as well. One possibility is to first write an outline from memory and then go back through your lecture notes to produce a more detailed outline.

- **Make additional drawings**. Graphical interpretation or representation can be incredibly useful for learning. Making copies by hand from things in the text that summarize the material covered in lecture can be helpful for learning interrelationships.

- **Review the text**. The material that I cover in lecture is obviously what I consider important, so focusing on those sections in the text is not entirely unwarranted. Probably the best method is to take notes as you read. Do not simply highlight or copy down sections verbatim. The only way to learn the information and concepts well is to *interpret* what you read using your own words.

- **Do practice quizzes**. There are review questions located at the end of each chapter. One strategy is to treat these like essay questions on an exam when you try to answer them. There are also online supplements for our text (listed at beginning of book on page xiv).

- **Form a study group**. Many of the terms and ideas in this class will be very foreign to you. With all the new terms it's almost like learning a new language. Trying to explain these ideas for the first time on an exam can be problematic. Rather I suggest that AFTER you have studied and think you know the material to get together with a group of other students in this class to review the material. Do so verbally. This will force you to explain things to others who should know if you are correct and hopefully clarify holes in your knowledge.

- **Come to my office hours**. I have listed my regular office hours on the syllabus and I can be contacted by e-mail. I will also be happy to meet with you outside of my hours if need be. Talk about the material with friends, classmates, study group partners, etc. It is better to find out that you don't understand before an exam instead of after an exam (when you can't change your grade).

Class Schedule **(tentative)**

Week	Day	Date	Class Topic	Chapter: Pages
1	T	Sep. 4	Intro to Intro / Scientific Method	1: 1-13
1	R	Sep. 6	An Ever-So-Brief History of Life on Earth	
1	F	Sep. 7	Darwin and the Beagle	6:100-104
2	T	Sep. 11	Natural Selection and Evolution	1: 13-14; 6: 104-118
2	R	Sep. 13	Mechanisms of Change	6: 118-131
2	F	Sep. 14	Taxonomy	10: 198-208
3	T	Sep. 18	Systematics	10: 208-214
3	R	Sep. 20	Vertebrate Diversity: Dinosaurs, Birds, & Mammals	27-28
3	F	Sep. 21	Vertebrate Diversity: Non-Avian Reptiles and Amphibians	25-26
4	T	Sep. 25	Vertebrate Diversity: Fishes & Other Chordates	23-24
4	R	Sep. 27	Diversity of Life: Why Are Chordates Successful?	
4	F	Sep. 28	**EXAM #1**	
5	T	Oct. 2	Invertebrate Diversity: Unicellular Eukaryotes	11
5	R	Oct. 4	Invertebrate Diversity: Early "Animals"	12
5	F	Oct. 5	Invertebrate Diversity: Radiates & Worms	13-14
6	T	Oct. 9	Invertebrate Diversity: Lophotrochozoans & Molluscs	15-16
6	R	Oct. 11	Invertebrate Diversity: Annelids	17
6	F	Oct. 12	Invertebrate Diversity: Ecdysozoans	18
7	T	Oct. 16	Arthropods	19-20
7	R	Oct. 18	Arthropods	20-21
7	F	Oct. 19	Echinoderms	22
8	T	Oct. 23	Diversity of Life: How Many Species Are There?	
8	R	Oct. 25	**EXAM #2**	
8	F	Oct. 26	Chemical & Molecular Basis of Life	2
9	T	Oct. 30	Basics of Cells: Building-Blocks of Life	3: 35-49
9	R	Nov. 1	Basics of Physiology: Homeostasis	30
9	F	Nov. 2	Cellular Metabolism: Thermodynamics & Enzymes	4: 55-60
10	T	Nov. 6	Cellular Metabolism: Acquiring & Using Energy	4: 60-69
10	R	Nov. 8	Animal Nutrition	32
10	F	Nov. 9	Circulatory Systems	31: 687-699
11	T	Nov. 13	Respiratory Systems	31: 700-707
11	R	Nov. 15	Endocrine Regulation	34
11	F	Nov. 16	An Overview of Homeostasis	
12	T	Nov. 20	**EXAM #3**	
12	R	Nov. 22	**THANKSGIVING BREAK**	
13	T	Nov. 27	Cellular Reproduction: Mitosis	3: 50-53
13	R	Nov. 29	Cellular Reproduction: Meiosis	5: 72-75
13	F	Nov. 30	Animal Reproduction: Gametogenesis	7: 134-143
14	T	Dec. 4	Animal Reproduction: Patterns	7:143-152
14	R	Dec. 6	Development	8: 155-170
14	F	Dec. 7	Developmental Patterns	8: 170-182
15	T	Dec. 11	Mendelian Genetics	5: 76-85
15	R	Dec. 13	Molecular Genetics	5: 85-95
15	F	Dec. 14	Integrating Principles of Animal Biology	
	M	Dec. 17	***COMPREHENSIVE*** **FINAL EXAM 8:00-10:00 a.m.**	

BIOLOGY 160
LABORATORY SCHEDULE - ROOM 355

Week	Dates	Exercises
1	Sep. 4-7	Microscopy and the Cell.
2	Sep. 10-14	Field Trip to Schmeeckle Reserve (wear appropriate footwear).
3	Sep. 17-21	RAT DISSECTION I: Skeleton and Muscles, Histology of Systems.
4	Sep. 24-28	RAT DISSECTION II: Digestive, Respiratory and Urogenital Systems, Histology of Systems.
5	Oct. 1-5	RAT DISSECTION III: Circulatory, Nervous and Sense Organs, Histology of Systems.
6	Oct. 8-12	INVERTEBRATE SURVEY I: Protozoa and Porifera. *EXAM 1*
7	Oct. 15-19	INVERTEBRATE SURVEY II: Coelenterata and Platyhelminthes.
8	Oct. 22-26	INVERTEBRATE SURVEY III: Nematoda, Rotifera, Gastrotricha, Nematomorpha, Rhynchocoela. Mollusca--Dissection of the Clam.
9	Oct. 29-Nov. 2	INVERTEBRATE SURVEY IV: Annelida--Dissection of the Earthworm; minor coelomate phyla (Ectoprocta, Tardigrada).
10	Nov. 5-9	INVERTEBRATE SURVEY V: Onychophora, Arthropoda I--Trilobita, Merostomata, Arachnida, and Crustacea--Dissection of the Crayfish.
11	Nov.12-16	INVERTEBRATE SURVEY VI: Arthropoda II--Diplopoda, Chilopoda, Insecta--Dissection of the Grasshopper; Echinodermata. *EXAM 2*
12	Nov. 19-23	**THANKSGIVING –** no lab.
13	Nov. 26-30	CHORDATE SURVEY I: Common Animals; Phylum Hemichordata, Phylum Chordata through the Class Amphibia.
14	Dec. 3-7	CHORDATE SURVEY II: Common Animals; Phylum Chordata, Class Reptilia through Class Mammalia.
15	Dec. 10-14	Chemical Composition of Protoplasm and Properties of Enzymes (bring a calculator and a watch with a second hand). *EXAM 3*

Each student must purchase a copy of the lab manual (*Introduction to Animal Biology*) from the University Bookstore during the FIRST WEEK OF SCHOOL. A dissection kit is also required and can also be purchased at the University Bookstore. Suggested Reference (not required): *A Photographic Atlas for the Zoology Laboratory* at the University Bookstore for approx. $38.00 (2 copies of this reference are on Reserve in the Library under Bio. 160 Staff). Also on reserve are several copies of *A Guide to Field Identification Birds of North America* by Chander et al.

LABORATORY EXAMINATIONS: The dates and materials covered will be announced by your instructor. Usually, major exams will be given during the evening exam sessions.

CHECK YOUR CLASS SCHEDULE FOR THE TIME YOUR SECTION HAS BEEN ASSIGNED TO TAKE EVENING EXAMS--MAKE CERTAIN THAT YOU DO NOT HAVE AN EVENING CLASS OR OTHER COMMITMENTS FOR THAT EVENING OF THE WEEK. YOU ARE EXPECTED TO TAKE LABORATORY EXAMS WHEN THEY ARE SCHEDULED.

NOTE: Review demonstration materials during the evening open lab sessions. These materials will not be available for study during subsequent weeks, except in the form of 2 x 2 slides. A list of slides available is found in the back of your lab manual.

COMMON ANIMALS OF WISCONSIN (2x2 slides) will be available throughout the semester for you to study during open labs. The list of Common Animals with which you need to become familiar is found in Appendix II of your lab manual. A set of slide trays are also available in the IMC--3rd floor of Learning Resources Center on a first come-first serve basis. These slides are also available at: http://ereserve.uwsp.edu (please refer to Appendix VIII in your lab manual beginning on page 6-46 for a list of these slides).

NOTE: For off campus use of e-reserve (dorms are considered off campus), students logon for E-Reserve with their usual logon/password preceding their password with **uwspdom**

Common Animal Website: https://www4.uwsp.edu/biology/courses/zoolab/default.htm

OPEN LABS: This schedule is for the labs meeting in Room 355. Biology 160 labs (Rooms 351 & 355) are open for night study from 6:30pm-8:30pm on Monday through Thursday nights (except week I). This service is to provide you an opportunity for additional study and is **NOT** meant to substitute for regular attendance and participation in your day lab section. There are **NO** instructors present and the student monitors on duty are there **SOLELY** to provide security for the area, are **NOT TUTORS**, and **SHOULD NOT BE EXPECTED TO ANSWER QUESTIONS**! While we hope that all students wishing to put additional time will be able to find some of the Open Lab hours that allow them to come in for night study, it is **IMPOSSIBLE** to guarantee all students availability to the labs at their convenience due to limitations on student assistance and the need to set up, tear down and prepare for laboratory examinations and regularly scheduled labs. If your night exam time coincides with one of the Open Lab periods, then this time should usually be available to you for night study except times during the semester when you are having a night exam. If you have **SERIOUS** and **IRRECONCILABLE** school or work conflicts with **ALL** of the available Open Lab periods that **PREVENT** you from attending any of the Open Lab sessions, then you should discuss alternatives with your instructor. Your instructor will be glad to consult with you and try to come up with alternatives, but we cannot guarantee access to everyone since this is a large, multisection course with several hundred students each semester. Additionally, you should be aware that Open Labs are not always available during the periods when instructors are giving laboratory exams since they may need to be closed to accommodate lab exam setup and tear down. Also, not all materials available during the regularly scheduled labs will necessarily be available during night labs. **DO NOT BECOME DEPENDENT UPON NIGHT LABS AS A MECHANISM TO AVOID ATTENDING YOUR REGULAR SESSION OR TO LEAVE YOUR REGULAR LAB EARLY**!

IT IS STRONGLY RECOMMENDED THAT YOU PROTECT YOUR SKIN from chemicals during the preserved animal dissections by wearing rubber or plastic gloves. Gloves may be purchased locally. SAFETY GOGGLES ARE REQUIRED for the chemical labs.

Lost & Found: Items left in the Zoology labs will be retained until the end of the current semester. Check with Betsie Graham, lab manager or student proctors if you lost an item in lab. **Your name on notebooks, etc. is important--we can call or e-mail you.**