

INTRODUCTION TO ANIMAL BIOLOGY SYLLABUS

Bio 160 Section 4 & 5 – SEM I 2016-2017

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Office Hours: Mon & Wed 2-3 in TNR 339, Fri 10-11 at CPS Cafe

Required Supplies:

Textbook: Reece, Urry, Cain, Wasserman, Minorsky, Jackson. 2014. *Campbell Biology, 10th Ed.* Bookstore Rental.

For Lab (all available for purchase in book store): *Introduction to Animal Biology Lab Manual*, chemistry goggles, dissecting kit

Course Description:

This course will introduce you to how animals work, from cells to organ systems, how traits are inherited, and how animals interact with and adapt to their environments. You will also learn about animal classification, diversity of animals, and evolutionary relationship between many different types of organisms covered in lab, from sponges to mammals, as well as how those evolutionary relationships take shape (i.e., how evolution occurs). Even if you are not a biology major, you will leave this course with information that will affect your life in some way, whether it is personally or professionally.

Introductory Biology Sequence Learning Outcomes:

By the end of the biology introductory sequence (Biol 130, Biol 160, and Biol 270), you should be able to:

1. Recognize the multiple levels of complexity at which biological systems operate, from molecules to ecosystems and the biosphere, and explain the emergent properties and processes characteristic of each level.
2. Describe mechanisms for the continuity of life, including the processes of inheritance, development, and evolution.
3. Demonstrate proficiency in the methods and philosophy of science, including articulation and application of the Scientific Method, collection and analysis of biological data, and application of professional ethics.
4. Critically evaluate and synthesize biological information from multiple sources, including the primary scientific literature, and communicate biological knowledge to both professional and non-professional audiences.
5. Articulate the application of biological science to meeting the needs of society, including basic research, stewardship of biodiversity, human health, and entrepreneurial innovation.

Exams and Assignments, Points, Dates (tentative^a) (Projected Minimum Points = 895 +/-)

Daily lecture quizzes	60 (+/-)	Approximately 30 @ 2 points, 10% of quizzes will be extra credit
Lecture Exams	400 (+/-)	3 @ ~100 points, Exam Dates: 10/07, 11/04, and 12/02
Final Lecture Exam	125 (+/-)	Exam Date: Wed, 12/21, 2:45-4:45pm CPS 210
Lab Assignments	40 (+/-)	8 minimum @ ~5 points, many labs and/or pre-labs generate points
Lab Quizzes	210 (+/-)	8 minimum, variable points
Common Animal Exam	60	30 minimum, 2 points each, unannounced

– **Quizzes and Assignments can be added at any time at my discretion.**

– **Final exam is comprehensive;** study your old exams; exam will include new material covered since last exam. If you have an A- or higher in lecture *and* lab after all points for the course are recorded, you will be notified that you may opt out of the final exam. *In order to opt out of the exam, you must also attend lecture and lab through the last day of class.*

Grades: A=93-100%, A-=90- 92%, B+=87-89%, B=83-86%, B-=80-82%, C+=77-79%, C=73-76%, C-=70-72%, D+=67-69%, D=60-66%, F=< 60%

Attendance:

- Attendance for lecture and lab is mandatory, and there is a strong positive correlation between the amount of time a student spends in class and his or her final grade.
- If a quiz, exam, or other assignment is missed and you are not involved in a university-sponsored event, *I will evaluate whether or not to excuse the absence* and how to administer the assignment on a one-on-one basis. Daily quizzes, pop quizzes, and any extra credit assignments cannot be made up unless you have an official university excuse and/or I am notified ahead of time of your absence and we work out a plan, based on the reason for absence from the work. If you are truly sick and need to stay home, that is fine, but please let me know as soon as possible about your absence.
- If you are late to class, daily lecture and lab quizzes and exams must be turned in at the same time as all other students. No extra time will be given to complete the quiz or exam.
- See UWSP 22.03 in the university handbook regarding absences due to religious beliefs (and no, hunting is not considered a religious belief.)

I do not give extra credit assignments on an individual basis, so please do not ask: I would rather you use any extra time you have toward your best effort on the assigned material. I will work with you in any way I can to help you get a better grade *on future course work assigned to the entire class.*

Students with Disabilities: Students with disabilities are welcome and encouraged in this class. You should contact the Office of Disability Services during the first two weeks of the semester if you wish to request specific accommodations. Also, if you have a medical problem (for example, serious migraine headaches that require medical attention, or depression) that may cause you to miss class or exams often, please contact the Disability and Assistive Technology Center (609 Learning Resources so your professors can be notified appropriately of accommodations that should be made for you.

Student Academic Standards and Disciplinary Procedures: You can find out about the academic standards and your responsibilities as a UWSP community member at <https://www.uwsp.edu/stuaffairs/Documents/RightsRespons/SRR-2010/rightsChap14.pdf>. Any form of cheating, plagiarism, or any misrepresentation of your work, or if you are knowingly assisting someone in cheating, this will result in a grade of zero (0) points for that test, quiz, or other assignment.

Class Conduct: I expect good conduct and a high level of respect in the classroom, between you and your peers and between you and me.

Please turn off your cell phones, refrain from texting and casual talking during lectures, lab introductions and discussion, and exams and quizzes. Good conduct does make a difference in determining your final grade.

Help & Resources

If you are feeling lost or overwhelmed...

1. Make an appointment with me

Come see me during my office hours or make an appointment. **I'm always happy to see my students and always willing to help in any way that I can!**

2. Attend a group study session

Supplemental Instruction (SI) group study sessions are opportunities to get reinforcement of lecture topics and additional help with concepts you just don't understand. The SI leader, will attend my lectures, so he or she will be familiar with what I am covering in class.

3. Go to the TLC

Head over to the Tutoring and Learning Center in room 018 Learning Resources Center for drop-in tutoring.

4. See a counselor

The counseling center is located on the 3rd floor of Delzell hall, and they can assist you will test anxiety, time management, and struggles with social issues.

5. Talk to Disability Services

If you have, or think you may have, a disability that is preventing you from making it to class, studying, or being successful on exams, contact the Disability and Assistive Technology Center in 609 LRC.

How can I succeed and excel in this course?	How Much Do I Need to Study?	How Can I Do Well on the Exams?	How Can I <i>Excel</i> ?
<p>Your commitment to your classes is one of the most important things in your life right now.</p> <p>Even if you have a full time job outside of school, college is your career! To get the most out of your academic experience, you must be committed to coming to class, you must put in the time to learn the material, and you need to go beyond the course and ask yourself and others questions about biology.</p>	<p>Plan to study 2-3 HOURS FOR EVERY HOUR OF CLASS YOU ATTEND.</p> <p>Review the afternoon or evening after your lecture; this allows you to review your notes while they are fresh in your head and make sure you didn't forget to write something down. Review before class; this will help you better prepare for class that day and reinforce the material from previous lectures. Do not wait until the weekend to study. The weekend is for review and catching up with your friends.</p>	<p>I provide what, I think, is interesting material, but you are the only one that can get it into your head. Ways you can study are to rewrite your notes, take notes on your notes, and take notes on your book readings. But, the most important key to success on exams is to <u>challenge yourself</u>...until you're sure you know it. Research suggests that <i>just</i> rereading gives you a false sense of knowledge. How will you actually know you know it unless you test your knowledge? So, spend some time making yourself some tests from your notes.</p>	<p>You get out of your classes what you put into them. You can wade through and get some basic knowledge, and that is fine. You can really put in some serious time studying the given material and do well in the class. But, what you really <i>should</i> want is to maximize that precious money you are spending on school. Ask questions, of yourself or me, beyond what is given to you. I may not always know the answer, but it is a start to greater knowledge for you and, perhaps, for me. You may also want to subscribe to a science magazine or science new websites.</p>

Examples of activities in this course that reinforce learning:

- Lab investigates which types of molecules move across membranes by osmosis and diffusion
- Cell drawing activities in lab reinforce knowledge of structure and function of the animal cell
- Modeling of mitosis and meiosis processes in lab will provide a visual, hands-on self-demonstration of how the chromosomes rearrange themselves during cell division.
- Following a lab studying classification, taxonomy, phylogenetics, and reading cladograms, students develop their own cladogram of Deuterostomia, based on characters possessed by the various groups studied in lab.
- Following a lecture on thermoregulation, students investigate the effects of warmer versus cooler temperatures on endothermic and exothermic organisms' metabolism and use of O₂.

TENTATIVE Overview of Lecture and Lab Topics

	Date	Lect #	Lecture topic	Reading	Lab topic
T	9/6		Introduction		No Lab
Th	9/8	1	Unifying Themes of Life + What is Zoology	Ch. 1	NOTE: If you have not had chemistry in a while and need to review, please read and study chapters 2-3 on atoms, bonding, and water. Also, if you need further help, don't hesitate to come see me! I'm always happy to sit down one-on-one for extra help.
F	9/9	2	Chemistry of Life: Carbon, Macromolecules, & biological molecules	Ch. 4-5	
T	9/13	3	Chemistry of Life: Carbon, Macromolecules, & biological molecules	Ch. 4-5	
Th	9/15	4	Cell Membrane, extracellular matrix, movement across membrane	Ch. 6,7	- Syllabus Quiz (5 pts.) - Interest Survey
F	9/16	5	Cell-to-cell communication, cell Form & Function,	Ch. 6,7	- Intro to Lab -Introduction to Microscopy
T	9/20	6	Intro to Cellular Metabolism + enzymes	Ch. 8-9	-Properties of Membranes, Diffusion & Osmosis - Cell drawing activity (10 pts.), due in lab next week (BRING GOGGLES)
Th	9/22	7	Cellular Respiration	Ch. 9	
F	9/23	7	Cellular Respiration	Ch. 9	
T	9/27	8	Cell Cycle & Mitosis	Ch. 12	-Quiz: Properties of Membranes (~10 pts)
Th	9/29	9	Sexual Life Cycle & Meiosis	Ch. 13	
F	9/30	10	Genetics: Mendel, Genes, & Inheritance (see fig. 15.2 for more on Laws of Segregation & Independent Assortment)	Ch. 14-15	-Properties of Enzymes (BRING GOGGLES)
T	10/4	11	Chromosomal basis of inheritance	Ch. 15	-Mitosis & Meiosis
Th	10/6	12	Molecular Basis of Inheritance & DNA Replication	Ch. 16	
F	10/7		Exam I: material through 9/30		
T	10/11	13	Gene Expression (from gene to protein) & regulation	Ch. 17- 18	- Quiz: Properties of Enzymes (~10 pts.)
Th	10/13	14	Genomes, mutations, and genomic evolution	Ch. 21	
F	10/14	15	Animal Diversity	Ch. 32	- Phylogeny & Classification, Ch. 26 - Mendelian Genetics exercise (Punnett Squares & Pedigrees)
T	10/18	16	Evolution: Early Theories, Descent with Modification	Ch. 22	-Deuterostomes I: early vertebrates, Fishes-amphibians, Ch. 34, - applied phylogeny - common animal introduction,
Th	10/20	17	Evolution: Evolution of Populations	Ch. 23	
F	10/21	18	Evolution: Evolution of Populations & of Species	Ch. 23-24	
T	10/25	19	Evolution III: Evolution of Species	Ch. 24	- Quiz: Phylogeny & Classification (~20 pts.)
Th	10/27	20	Animal Reproduction & Fertilization	Ch. 46	
F	10/28	21	Animal Development	Ch 47	
T	11/1	22	Animal Nutrition & Digestive Systems	Ch. 41	-Invertebrates I (Porifera, Cnidaria, Platyhelminthes, Nematoda), Ch. 33
Th	11/3	23	Animal Nutrition & Digestive Systems (cont.)	Ch. 41	
F	11/4		Exam II: material through 10/28		

T	11/8	23	Circulation & Circulatory Systems	Ch. 42	-Quiz: Deuterostomia (~25 pts.)
Th	11/10	23	Circulation & Circulatory Systems	Ch. 42	-Invertebrates II (Mollusca, Annelida), Ch. 33
F	11/11	24	Respiration & Respiratory Systems	Ch. 42	
T	11/15	25	Neurons, Synapses, Signaling	Ch. 48	-Quiz: Invert I & II (~25 pts.)
Th	11/17	26	Nervous Systems	Ch. 49	-Invertebrates III (Tardigrada, Arthropoda), Ch. 33
F	11/18	27	Sensory Systems	Ch. 50.1-4	Start rat dissection if time permits
T	11/22	28	Endocrine System	Ch. 45	-Quiz: Arthropoda (~20 pts)
Th	11/24		Thanksgiving: No lecture		- Lecture: histology + histology slide study, Ch. 40, 47, 50.5-6
F	11/25		Thanksgiving: No lecture		- Rat Dissection I: skinning, Skeleton & Muscles
T	11/29	29	Skeleton & Movement, & Muscle/Muscle Contraction	Ch. 40, 47, 50.5-6	-Rat Dissection II/III: Histology, Digestive, Respiratory, Urogenital Systems, Circulatory & Nervous Systems
Th	12/1	30	Skeleton & Movement, & Muscle/Muscle Contraction	Ch. 40, 47, 50.5-6	
F	12/2		Exam III: material through 11/25		
T	12/6	31	Homeostasis: Thermoregulation	Ch. 40.2-4	- Rat Review - Histology & Rat Exam (30)
Th	12/8	32	Homeostasis: Osmoregulation	Ch. 44	
F	12/9	33	Ecology: Introduction	Ch. 52	
T	12/13	34	Ecology: Populations	Ch. 53	Common Animal Exam (60 slides, 60 points) Metabolism Lab
Th	12/15	35	Ecology: Communities	Ch. 54	
F	12/16		NO CLASSES		
W	12/21		FINAL EXAM, 2:45-4:45, CPS 210		