

INTRODUCTION TO ANIMAL BIOLOGY SYLLABUS

Bio 160 Section 1 & 2 – SEM I 2017-2018

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Office Hours: Mon 1-2, Tue 1-2, Wed 11-1, or by appointment

Required Supplies:

Textbook: Urry, Cain, Wasserman, Minorsky, Jackson, Reece. 2017. *Campbell Biology, 11th Ed.* Bookstore Rental.

For Lab (all available for purchase in book store): *Introduction to Animal Biology Lab Manual, The White Rat*, 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 = 800 +/-)

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| Exams, include lab material | 400 (+/-) | 4 @ ~100 points |
| Exam Pre-view Quizzes | 50 (+/-) | 4@10 points |
| Final Lecture Exam | 150 (+/-) | Includes material previously covered + new material |
| Lab Quizzes & assignments | 200 (+) | ~20 (quizzes & assignments) total with variable points |

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

– **Though labs will include regular lab quizzes, exams covered during the lecture exam will include both lecture and lab material, as this is a combined lecture and lab class and the topics covered in each portion compliment the other.**

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%

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. These distractions take away from the positive learning experience I would like to have in class. Furthermore, having this respectful experience and attitude in class prepares you for the expectations of your future employers. Lastly, *good conduct does make a difference in determining your final grade.* This goes for lab, too. There are plenty of times where you can take a break and go outside the lab to check your texts or social media, but please do it outside the classroom once class has started. You may, however, use your phone to take pictures in lab or to use for timing experiments.

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 ALB) 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.

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 (TLC) in room 018 Albertson Hall (ALB) for drop-in tutoring, office hours, or to sign up for one-on-one tutoring with a former Bio 160 student.

4. See a counselor

The counseling center is located on the 3rd floor of Delzell hall, and they can assist you with 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 ALB.

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| <p>How can I succeed and excel in this course?</p> <p>Your commitment to your classes is one of the most important things in your life right now. 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>How Much Do I Need to Study?</p> <p>Plan to study 2-3 HOURS FOR EVERY HOUR OF CLASS YOU ATTEND. 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>How Can I Do Well on the Exams?</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>How Can I <i>Excel</i>?</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> |
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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. The schedule may be changed at any time at my discretion.

| | Date | Lect # | Lecture topic | Reading | Lab topic |
|----|-------|--------|---|------------|---|
| T | 9/5 | 1 | Introduction | | No Lab This Week |
| Th | 9/7 | 2 | Unifying themes of Life, Intro to Zoology as a Science | Ch. 1 | |
| F | 9/8 | 2 | Introduction to Chemistry | Ch. 2 | |
| T | 9/12 | 3 | Chemistry of Life: Carbon, Macromolecules, & biological molecules | Ch. 4-5 | <ul style="list-style-type: none"> • Introduction to Lab, Orientation & Safety • Lecture: Introduction to Cells – Inside the Cell, Cell Membrane, Extracellular Matrix, Ch. 6, 7 • Introduction to Microscopy & a look at your own cells |
| Th | 9/14 | 4 | Chemistry of Life: Carbon, Macromolecules, & biological molecules | Ch. 4-5 | |
| F | 9/15 | 5 | Movement of substances across membranes, Cell Communication | Ch. 7, 11 | |
| T | 9/19 | 6 | Intro to Cellular Metabolism + enzymes | Ch. 8-9 | <ul style="list-style-type: none"> • Properties of Membranes, Diffusion & Osmosis (BRING GOGGLES) • Quiz: Introduction to Cells & Microscopy |
| Th | 9/21 | 6 | Cellular Respiration | Ch. 9 | |
| F | 9/22 | 7 | Cellular Respiration, preview quiz | Ch. 9 | |
| T | 9/26 | 8 | Cell Cycle & Mitosis | Ch. 12 | <ul style="list-style-type: none"> • Properties of Enzymes (BRING GOGGLES) • Quiz: Properties of Membranes, osmosis, diffusion |
| Th | 9/28 | 8 | Sexual Life Cycle & Meiosis | Ch. 13 | |
| F | 9/29 | | Exam I (through cellular respiration lecture, properties of membranes, diffusion, osmosis lab) | | |
| T | 10/3 | 9 | Sexual Life Cycle & Meiosis | Ch. 13 | <ul style="list-style-type: none"> • Metabolism (cellular respiration & thermoregulation) (BRING GOGGLES) • Quiz: Properties of Enzymes |
| Th | 10/5 | 9 | Genetics: Mendel, Genes, & Inheritance (see fig. 15.2 for more on Laws of Segregation & Independent Assortment) | Ch. 14-15 | |
| F | 10/6 | 10 | Genetics: Mendel, Genes, & Inheritance (see fig. 15.2 for more on Laws of Segregation & Independent Assortment), follow-up in lab | Ch. 14-15 | |
| T | 10/10 | 11 | Chromosomal basis of inheritance | Ch. 15 | <ul style="list-style-type: none"> • Mendelian Genetics Exercises • Quiz: Metabolism |
| Th | 10/12 | 11 | Molecular Basis of Inheritance & DNA Replication | Ch. 16 | |
| F | 10/13 | 12 | Molecular Basis of Inheritance & DNA Replication, pre-view quiz | Ch. 16 | |
| T | 10/17 | 14 | Gene Expression (from gene to protein) & regulation | Ch. 17- 18 | <ul style="list-style-type: none"> • Phylogeny & Classification, Ch. 26 • common animal (CA) introduction |
| Th | 10/19 | 15 | Evolution: Early Theories, Descent with Modification, mutations | Ch. 22, 21 | |
| F | 10/20 | | Exam II (through DNA replication, Mendelian genetics lab) | | |
| T | 10/24 | 16 | Evolution: Evolution of Populations | Ch. 23 | <ul style="list-style-type: none"> • Evolution of the Animal Body Plan, Ch. 32 • Deuterostomes I: early vertebrates, fishes, amphibians, Ch. 34 • Quiz: Phylogeny & Classification |
| Th | 10/26 | 17 | Evolution: Evolution of Populations & of Species | Ch. 23-24 | |
| F | 10/27 | 18 | Evolution III: Evolution of Species | Ch. 24 | |
| T | 10/31 | 19 | Animal Reproduction & Fertilization | Ch. 46 | <ul style="list-style-type: none"> • Deuterostomes II: reptiles through mammals, Ch. 34 • Quiz: Animal Body Plan, Deuterostomia I + fish CA |
| Th | 11/2 | 20 | Animal Development | Ch 47 | |
| F | 11/3 | 21 | Animal Nutrition & Digestive Systems, pre-view quiz | Ch. 41 | |

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| T | 11/7 | 21 | Animal Nutrition & Digestive Systems | Ch. 41 | <ul style="list-style-type: none"> Invertebrates I (Porifera, Cnidaria, Platyhelminthes, Nematoda), Ch. 33 Quiz: Deuterostomia II + amphibian & reptile CA |
| Th | 11/9 | 22 | Circulation & Gas Exchange | Ch. 42 | |
| F | 11/10 | | Exam III (through Animal Nutrition, Deuterostomia II lab) | | |
| T | 11/14 | 22 | Circulation & Gas Exchange | Ch. 42 | <ul style="list-style-type: none"> Quiz: Invert I + bird CA Invertebrates II (Mollusca, Annelida), Ch. 33 |
| Th | 11/16 | 23 | Neurons, Synapses, Signaling | Ch. 48 | |
| F | 11/17 | 23 | Neurons, Synapses, Signaling | Ch. 48 | |
| T | 11/21 | 24 | Skeleton & Movement, & Muscle | Ch. 40, 47, 50.5-6 | <ul style="list-style-type: none"> Quiz: Invert II (including dissections) + Mammal CA Invertebrates III (Tardigrada, Arthropoda), Ch. 33 Histology Lecture, Ch. 40, 47, 50.6 |
| Th | 11/23 | | Thanksgiving Break: No Classes | | |
| F | 11/24 | | Thanksgiving Break: No Classes | | |
| T | 11/28 | 26 | Skeleton & Movement, & Muscle | Ch. 40, 47, 50.5-6 | <ul style="list-style-type: none"> Quiz: Invert III Rat Dissection I/II: skinning, External, Skeleton, Muscles, bones, Digestive, Respiratory, Urogenital Systems |
| Th | 11/30 | 27 | Homeostasis: Thermoregulation | Ch. 40.2-4 | |
| F | 12/1 | 28 | Homeostasis: Osmoregulation, pre-view quiz | Ch. 44 | |
| T | 12/5 | 29 | Ecology: Introduction | Ch. 52 | <ul style="list-style-type: none"> Quiz: Histology, rat external, rat & human bones, planes of dissection Rat Dissection II/III: Circulatory & Nervous Systems Rat Dissection Study (practicum coming up next week!) |
| Th | 12/7 | 30 | Ecology: Populations | Ch. 53 | |
| F | 12/8 | 31 | Exam IV (through Osmoregulation, Rat Dissection I/II lab) | | |
| T | 12/12 | | Ecology: Populations, Communities | Ch. 53, 54 | <ul style="list-style-type: none"> Rat Practicum: Rat muscles, digestive, respiratory, urogenital, circulatory, and nervous systems, other items not covered by last week's quiz Answer any questions about exam |
| Th | 12/14 | | Ecology: Communities, Climate Change | Ch. 54 | |
| F | 12/15 | | Catch up/TBA/Final Exam Review | | |
| M | 12/18 | | FINAL EXAM, 8:00-10:00am, Sci A208 | | |

Lab Protection: Eye protection will be required during any labs where chemicals will be used during the lab assignment. Gloves will be provided where it is necessary to wear them (e.g., during the osmosis and diffusion lab), but gloves will not be provided for other labs, such as the dissection labs. If you want gloves for those labs, you must purchase them yourself. If you do decide to purchase gloves for those labs, try to make sure to get gloves that fit your hand.

Open Lab: Biology 160 labs (Rooms 351 & 355) are open for night study from 6:00pm-8:00pm on Tuesday through Thursday nights (except week I & II). 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.