

BIOLOGY 120 – CONCEPTS IN BIOLOGY
COURSE SYLLABUS, DR. AMANDA PENDLETON
FALL 2012

Faculty Information: Pierce 105, (770) 784 – 4506, arpendl@emory.edu

Office hours: Th 3 – 5 PM & F 9 – 10 AM; or feel free to make an appointment with me for another time

Course Meeting Times:

Lecture – T, Th	10 – 11:40 AM	Pierce Hall Room 102
Lab – M	2:30 – 5:30 PM	Pierce Hall Room 119

Required Texts:

- (1) **Text:** *Essentials of Biology*, S.S. Mader & M. Windelspecht, 3rd edition, McGraw Hill publishing company, 2012.
- (2) **Lab Manual:** The custom laboratory manual for this course will be available in the laboratory. Your student account will be charged.

Course description: Bio120 is an introductory biology course meant for students who are not majoring in biology. The course content is designed to help students understand the following core concepts:

- Common structures found in almost all living things
- Common ways that almost all living things use to interact with their environments
- The function of hereditary information and how hereditary information is passed to future generations
- Cellular and environmental factors that contribute to evolution
- Infectious organism life cycles and human immune responses to these organisms

This course will then give students practice connecting these core concepts to the following issues that are critical to biology and society:

- The definition of life and the possible origin of life on this planet
- Energy and nutrition
- Brain function and behavior
- Disease conditions, such as drug addiction and cancer, as well as current treatments for cancer
- Importance of and issues involved in maintaining healthy ecosystems.
- Impact, prevention and treatment of infectious disease

Students will be given experience, in both lecture and laboratory portions, asking questions, solving problems, and inquiring about the world around them using the tools and techniques of biology. Through these experiences, I hope that students will learn to incorporate a biology perspective into their approaches to their own disciplines and future careers. Additionally, I hope that this course will give students the background and tools for dealing with personal issues related to biology that will arise in their futures. Finally, I hope that this course will help prepare students to participate in society as informed and responsible citizens.

BIOLOGY 120: CLASS SCHEDULE: FALL 2012

Date	Topic	Due
Module 1: The physical basis of 'life'		
Th Aug 30	Science as a way of knowing; Questions; Evolution	
T Sep 4	Building blocks for life	BCQ 1
Th Sep 6	Cell Theory	BCQ 2
M Sep 10	Lab: Scientific investigations using bacteria	
T Sep 11	Article Discussion #1 w/ library session #1	Response 1 Questions
Th Sep 13	Article Discussion #2: What is life? How did life begin?	Response 1
M Sep 17	Lab: The microscope; the cell	

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Date	Topic	Due
Module 2: Energy-flow on Earth, in our bodies, & in cells		
T Sep 18	Energy, Photosynthesis, Cellular respiration & Case study: 'Energy' Drinks??	BCQ 3
Th Sep 20	Developing an independent project w/ library session #2	Project Concept Map
M Sep 24	Lab: Digestion & nutrition and Ch. 25	
T Sep 25	Exam I (Modules 1 & 2)	
Module 3: Brain & behavior		
Th Sep 27	Membrane transport	BCQ 4
M Oct 1	Lab Exam I (Scientific Method, Cells, Digestion & Nutrition)	
T Oct 2	Neurons, the brain & behavior	BCQ 5
Th Oct 4	Case studies: drug addiction & the monogamous brain	BCQ 6
M Oct 8	Lab: Cell transport	
Module 4: Cancer		
T Oct 9	Central dogma & mutation	BCQ 7
Th Oct 11	Mitosis, cell cycle & cancer basics	BCQ 8
M Oct 15	Fall break – no lab	
T Oct 16	Fall break – no class	
Th Oct 18	Meiosis & inheritance	BCQ 9
		Response 2
M Oct 24	Lab: cellular reproduction	
T Oct 23	Case studies: treating cancer & inherited cancers	BCQ 10
Th Oct 25	Genetic counseling and the future of genetics	BCQ 11
	<i>Independent project: Polished draft</i>	
M Oct 29	Lab: Molecular biology & human genetics	
T Oct 30	Exam II (Modules 3 & 4)	
Module 5: Evolution & Environment		
Th Nov 1	Evolutionary theory and evidences	BCQ 12
M Nov 5	Lab Exam II (Cell transport, Cellular reproduction, Human genetics)	
T Nov 6	Evolutionary theory and evidences	
Th Nov 8	Co-evolution and population dynamics; Case study: carbon cycle	BCQ 13
	<i>Independent project: Peer feedback</i>	
M Nov 12	Lab: Reproduction & evolution	
T Nov 13	Environment & humans; Introduction to soils/hypothesis	BCQ 14
Th Nov 15	Lab: Collection of soil samples	BCQ 15
M Nov 19	Lab: Ecology of soils	
Module 6: Infectious Disease		
T Nov 20	Basics of infectious organisms & host interactions	BCQ 16
Th Nov 22	Thanksgiving – no class	

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Date	Topic	Due
M Nov 26	Lab: Cardiovascular & renal systems	
T Nov 27	Infectious disease transmission and treatment	BCQ 17
		<i>Independent project: Final form</i>
Th Nov 29	Social determinants of disease: readings & discussion	
M Dec 3	Lab Exam III (Reproduction, Ecology, Cardiovascular & renal systems)	
T Dec 4	Social determinants of disease: readings & discussion	
Th Dec 6	Social determinants of disease: readings & discussion	
T Dec 11	Public health policy evaluation	

FINAL EXAMINATION: Monday, December 17; 2:00 pm – 5:00 pm
(Modules 5 & 6; comprehensive questions)

Evaluation Points:

Lecture exams (2)	200 points
Laboratory exams (3)	150 points
Final exam	175 points
Before class quizzes	15 points
Reading responses	20 points
Independent pamphlet project	45 points
Public health policy evaluation	30 points
Total	635 points

Final grade determination:

(Plus and minus grades are given)

90 - 100%	A
80 - 89%	B
70 - 79%	C
60 - 69%	D
<60	F

EXPECTATIONS, EVALUATION AND TIPS FOR SUCCESS IN BIOLOGY 120

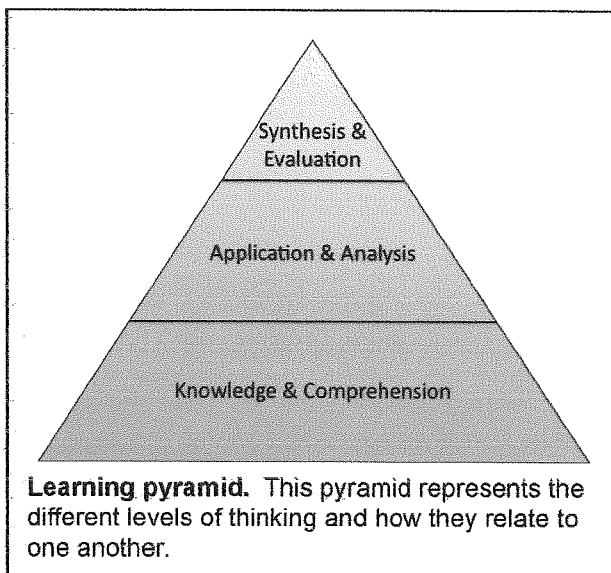
Welcome to Biology 120! The information in this handout and accompanying materials is designed to help you navigate this course. Please do not hesitate to ask for clarification at any time.

Tips for Success: Biology 120 is an intensive course that requires time and commitment. To perform well in this course, you must manage your time appropriately and have a proper study plan, beginning from the first day of class. The best overall approach is to work consistently, in small doses. The following are some additional tips that will help you succeed:

- **Be prepared for class every day.** The readings should be done before class. The best overall reading approach is to read before class (or at least browse) assignments at first for an overview, jotting down questions or areas of confusion. I have assigned several 'Before-class Quizzes' to help you focus on the most important knowledge you should bring with you into class each day. Finally, read a second time after class (the same day as class is best), using a different color of highlighter and paying careful attention to topics discussed during class. This second reading is critical because it will help you to connect class discussions to the textbook readings.
- **Take good notes.** During class, we will discuss the most significant concepts from your readings. At times, I will present examples that may not be given in your textbook. You are responsible for all of the information discussed in class. Good note-taking will help you to remember which concepts are most important and why. Additionally, the act of note-taking is a learning exercise that helps you actively engage in the topic and better remember class discussions. Feel free to also print out class powerpoints before class and annotate the figures during class if you find this helpful.
- **Ask questions.** Biology 120 is a collaborative course. Therefore, if you don't understand something discussed in class, ask questions in class, ask questions of your peers, form productive study groups, or arrange to meet with me. I welcome your questions, and if you're struggling, it's important to get help early. Additionally, by asking questions, you take charge of your own learning.

- **Build a foundation of knowledge, but aim high in your thinking** (adapted from www.cas.lsu.edu). While studying, keep in mind that you will need to do more than simply learn facts; you will need to think. We will use a learning pyramid as a guide for our thinking this semester:

- **Level 1 = Knowledge & Comprehension:** Memorizing and understanding information, restating in your own words, paraphrasing, or summarizing.
- **Level 2 = Application & Analysis:** Identifying parts, patterns, and connections in new information and comparing, contrasting, or arranging these parts and patterns in a logical order or in categories. Using information to solve new problems; transferring abstract or theoretical ideas to a practical, new situation.
- **Level 3 = Synthesis & Evaluation:** Evaluating the relative effectiveness, value, or worth of a set of different solutions, ideas, or results. Predicting consequences. Taking a position on an issue and defending that position. Combining information to form a unique product that requires creativity and originality.



Notice how each level of the pyramid builds on the foundation that precedes it. We must learn the lower levels before we can effectively perform at higher levels. In general, students who earn lower grades have not gone past the 'Knowledge & Comprehension' level. Students who earn higher grades generally know the course material well enough to perform higher level thinking tasks.

- **Review, review, review and practice.** Any biology course these days has a lot of information. So, mastering the course material at the 'Knowledge & Comprehension' level first is key. To do this, I suggest that you study the appropriate diagrams in your text and lecture handouts; practice writing out and linking concepts by memory; prepare your own tables and diagrams as a study aid; create lists of questions that help you remember the material, and then practice answering those questions by memory. You should do at least one or two of these activities (in addition to your reading) each day. To move up to the higher learning levels, complete all worksheets, problems, and case studies given during class. Use the online textbook resources for additional study help.

Evaluation Criteria:

- **Lecture examinations:** The lecture exams will be a combination of multiple choice, short answer and short essay questions, including application problems. Exams will focus on material covered in the classroom and assigned problems, responses, and case studies. The final examination will cover the last portion of the course (Modules 5 & 6) and will also include comprehensive questions.
- **Laboratory examinations:** Laboratory exams will be in a practical exam format and can include all material covered during lab, as well as all material found in the custom laboratory manual for this course or on the Blackboard site. Reading each exercise thoroughly before each lab will help you learn the most during your laboratory period.
- **Before-class Quizzes (BCQs):** Students will complete a simple, short quiz that accompanies each textbook reading assignment. These quizzes are available on the course Blackboard website before class only. Each quiz will be graded as "full credit" / "no credit" and will be worth 1 point. To receive "full credit" on a BCQ, a student must answer at least 75% of the questions correctly. BCQs direct students to important information to understand before arriving to class. Exams assume a higher mastery of course material and will be much more difficult than BCQs.
- **Reading responses:** Special readings will be distributed twice during the semester and will be the basis of literature research, discussion and writing assignments. Responses will be worth a total of 20 points.

- **Independent project:** Students (in coordination with the instructor) will choose a biology-related topic. Students will then research this topic and present their findings in an informational pamphlet meant for the general public. A rubric with more details is available on the course Blackboard site.
- **Public health policy evaluation:** You will use your knowledge of the causes of infectious disease to evaluate a piece of public health policy for its potential efficacy. Your evaluation will be submitted on Blackboard by 5 PM on December 12 and will be assessed using a rubric available on the course Blackboard site.
- **Extra Credit:** We have the special opportunity this semester to have on campus two lecturers who will speak about societal issues related to science. You will be awarded extra credit for attending lectures and writing responses. Jessica Wyndham, a human rights lawyer from the American Association for the Advancement of Science, will be lecturing on Monday, October 29 at 7:30 PM in Williams Hall. Donna Barry with Partners in Health will lecture on Tuesday, December 4 at 7:30 PM in Williams Hall. Her organization offers preferential treatment for some of the world's poorest people in the context of societal structures that disadvantage them.

Class Policies:

1. **Attendance:** See the attached sheet for the attendance policy. Unexcused absences in lecture, lab, examinations or a failure to follow the procedures outlined in that handout will result in a reduction in your grade. It is your responsibility to communicate with the instructor as much in advance as possible about medical or family emergencies or send a message through another student.
2. **Exams:** Students should place all book bags, purses, and other belongings at the front of the room while sitting for any type of exam or graded assignment. Cell phones should be turned off and should be placed in bags or on a bench at the front of the room. (Desktops should be clear except for the materials needed and authorized for testing). Students should feel free to ask for clarification about any question during the exams.
3. **Late work:** My due dates are fixed. Therefore, late work will be subject to a penalty unless you provide documentation of a serious life event.
4. **Missed exams:** In general, missed exams may not be made up (see the attached sheet for the absence policy) except for serious reasons (such as death or illness) with proper documentation.
5. **Electronic devices:** Please turn off all cell phones and other electronic devices prior to entering the classroom. If you would like to take notes on your personal laptop in class you must seek special permission from the instructor. Use of laptops for surfing the web, Facebook, Skype, or other networking/chatting during class is not appropriate or respectful classroom behavior.
6. **Academic dishonesty:** Honesty and ethical behaviors are imperatives in any career. Therefore, academic dishonesty will not be tolerated. See http://oxford.emory.edu/audiences/faculty_and_staff/resource_policies/faculty_handbook/honor_code.dot for descriptions of what constitutes academic dishonesty. Regulations of the Honor Code apply to all work in this course, including lecture and lab examinations and all assignments, including draft assignments. Please pledge all of your work with your signature to indicate that you have followed the rules of the Honor Code. Anyone caught violating this policy will be reported to the Honor Council, as detailed in the Honor Code. If you have any questions about what constitutes your own work, definitely ask!
7. **College-wide Assessment:** Student work submitted as part of this course may be reviewed by Oxford College and Emory College faculty and staff for the purposes of improving instruction and enhancing Emory education.

ABSENCE POLICY – Biology Department

All students are expected to attend all lecture and laboratory sessions. However, emergencies may arise which will necessitate absences from class. Students are allowed 4 cuts in lecture and **NO CUTS** in lab. Students may only miss lab without penalty in cases of illness, family emergency or a school sponsored event **which is cleared with the professor in advance**. Students are responsible for all material which is covered in laboratory and lecture. When possible, students will be allowed to "make-up" laboratory material missed due to an excused absence; however, because of the nature of laboratory material, actual "make-up" of missed activities is usually impossible.

PENALTIES

Students who exceed the 4 cut limit in lecture for whatever reasons of have an unacceptable absence from laboratory will have their FINAL grade reduced 5 points per absence. **Students who miss 2 labs without acceptable reasons will fail the course (see below).**

LECTURE ABSENCES:

THERE ARE NO EXCUSED ABSENCES FOR LECTURE. Each student may be absent four times without penalty. These four cuts may be used for any reason: illness, studying, travel, family emergency, etc. However, ANY additional cuts will result in grade reduction. **USE YOUR CUTS JUDICIOUSLY**, e.g., for sick leave only.

ACCEPTABLE LABORATORY ABSENCES

Although no discretionary absences, i.e., "cuts", are allowed regarding laboratory, on rare occasions, illness, family emergencies, or certain school sponsored events may make it necessary for a student to miss a laboratory session. The instructor **MUST** be notified prior to the day of the absence in all but the most extreme emergencies.

In all cases, the final decision regarding whether or not an absence is acceptable will be made by the instructor.

AN UNACCEPTABLE ABSENCE FROM LABORATORY RESULTS IN A FIVE POINT REDUCTION IN THE FINAL GRADE. TWO UNACCEPTABLE LABORATORY ABSENCES RESULT IN FAILURE OF THE COURSE.

MISSED TESTS

Ordinarily, tests cannot be made up, however, this is up to the instructor. If a student misses a test, and the absence is acceptable the missed test will not count either for or against the student. If the absence is not excused the grade will be a zero. Students are cautioned that any excuse for missing an exam will come under severe scrutiny by the instructor. **THE INSTRUCTOR MUST BE NOTIFIED PRIOR TO THE TIME OF THE EXAM, AND THE INSTRUCTOR MAKES THE FINAL DECISION REGARDING WHETHER OR NOT AN ABSENCE IS ACCEPTABLE.**

Laboratory tests which are missed for a reason that is excused **MUST** be made up. **The instructor must be notified prior to the time of the test.**

RELIGIOUS HOLIDAYS:

Students must notify the instructor one week in advance if they intend to be absent for a religious holiday.

TARDINESS

Being late to class is rude and distracting. Continued tardiness by any student will result in the assignment or absences and ultimately a reduction in the student's grade. **Three tardies equal an absence.** The tardy student is responsible for notifying the instructor that she/he entered the classroom late and, therefore was not absent. The instructor reserves the option of excluding a person from further classroom or laboratory participation if the student is continuously tardy.

Falsification of information regarding absences from class or laboratory will be considered as a breach of academic integrity.

STUDENT INFORMATION SHEET

NAME: _____ [Freshman or Sophomore] SEMESTER: _____
(Print) (circle one)

NAME: _____ COURSE: _____
(Signature)

PHONE NUMBERS: Dorn: _____ Cell: _____

CAMPUS ADDRESS: _____

HOME ADDRESS: _____

HIGH SCHOOL: _____

TENTATIVE MAJOR/INTERESTS: _____

ACADEMIC ADVISOR: _____

PREVIOUS SCIENCE COURSES: HIGH SCHOOL: _____

COLLEGE: _____

List any health information that might be important for participation in the laboratory and on field trips. (For example: pregnancy, allergies, handicaps) _____

This information will be kept confidential if requested.