

Bio. 105 BIOLOGICAL CONCEPTS: UNITY
LECTURER: Dr. B. Holton SECTIONS: B01-B07 Fall 2012

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OFFICE HOURS: Tu 12:10-2:10pm, W 3:10-4:30pm or by appointment.

LECTURE HOURS: 1:50-2:50pm MWF in Halsey Science 106. Labs meet once/week for 2hrs.

TEXT (lecture): Campbell, Reece, Taylor and Simon (2012) **Biology: Concepts and Connections**, 7th edition, custom version for University of Wisconsin, Pearson, Inc. Note: Your book is invaluable....USE IT! Read assignments before coming to class then re-read those assignments after lecture. Study the figures closely....THEY ARE IMPORTANT. **If you have a used, old edition**, it will be sufficient but figure numbers won't match with what I show in class. Also, this year's new custom edition contains chapters on neuronal firing and muscle contraction that we will use.

TEXT (laboratory): **Bio-105 Concepts in Biology: Unity, Laboratory Manual.**

CLICKERS: Everyone should purchase a student response devise (clicker). The purpose of this devise will be to allow me to survey and quiz the class. Research shows that students are more alert, come to class more often and do better on exams when clickers are used! Let's give them a try!!! They are also used in other classes, for example, in chemistry.

PODCASTING: I Podcast my lectures. Do NOT use this feature as a regular substitute for attending lecture!!!

SUPPLEMENTARY INSTRUCTION (SI): Study groups will be held several times a week to help you learn how to study the material. These sessions will be led by a trained undergraduate (**Brian Diedrich**) who did well in Bio 105, previously. **GO TO THESE SESSIONS; THEY WILL HELP YOU.** (See last sheet of the syllabus.)

ATTENDANCE POLICY: I will not take role regularly in lecture. Attending lecture and good note-taking skills will increase your ability to do well in class. I will not repeat lectures nor do I publish my lecture notes.

LEARNING OBJECTIVES: 1) Students will learn the basic concepts of cell biology, physiology and function. This will allow them to better understand basic human physiology and medicine, how the natural world functions at a molecular level and basic principles of evolution.

2) Students will gain practice thinking critically. Toward these ends, we will examine how we know what we know, how to apply what we've learned to new situations and how to evaluate new information based on what we know.

3) Students will practice expressing themselves in writing, during lecture exams and by writing laboratory reports.

4) Students will learn to focus less on memorizing "facts" and more on learning entire processes and how they fit together.

Date	Lecture Topic	Text Ref.
Sept. 5, 7	What is science? What is philosophy? Are scientists the only people who follow the scientific method...or do we all use it?	Chapter 1
10-14	To understand how life exists and functions and how all life forms are similar, one must understand a bit of chemistry....what molecules are used in living systems, what are their properties, how is each crucial to the existence of life?	2-3
17-21	How are the simplest forms of life different from each other? How are they the same? What are the components of individual cells and how have some of these been specialized so that some cells can send messages (neurons), some can store energy (liver and fat cells) and some can lift weights (muscles)? What caused multicellular organisms to evolve? Is their competition and cooperation between cells in multicellular cellular organisms?	4
24-28	How are molecules and their forces harnessed to allow life to exist? How do cells control what enters and leaves? What molecules control the metabolism and behavior of cells?	5

Oct. 3-5	Discussion of Chapter 5 (cont.) PLUS how do cells generate electricity; what signals muscles to contract...practical aspects of diffusion.	5
Oct. 2	7-9pm Review/study session HS107	
Oct. 5	FIRST LECTURE EXAM!!!!	1-5
8-12	How do our cells get energy from the food we eat? What makes oxygen such an important molecule....from a molecular perspective? What is meant by RESPIRATION?	6
15-19	How is energy from the sun harnessed? Without this we would not exist. PHOTOSYNTHESIS	7
Oct. 22-24	The difference between replication and sex!!!	8

Oct 26-Nov 2	How are traits inherited? How can we calculate and predict patterns of inheritance?	9
Oct. 30	7-9pm Review/study session HS107	
Nov. 2	SECOND LECTURE EXAM	6-8, 9(?)
5-12	What do genes actually encode? How is the DNA code of a gene converted to something useful by the cell?	10
Nov 14-30	How do genes control cell behavior? How do they control development? How can scientists manipulate the process to genetically engineer animals and plants?	11
NOV. 21-25	THANKSGIVING !!!!! (Don't forget everything you've learned. NO LABS THIS WK.)	
Dec. 3-5	"Survival of the fittest"...how do populations change? What caused animals like cheetahs to be almost identical...even at the genetic level? What makes us think that evolution took place?	13-14 and parts of 15-16
Dec. 4	7-9pm Review/study session HS107	
Dec. 7	THIRD LECTURE EXAM	(9?), 10-16
Dec. 10	MAKE-UP EXAM (This is only for students who have MISSED an exam.)	
Dec. 11	REVIEW FOR FINAL EXAM (7-9pm) HS107	
Dec. 14	COMPREHENSIVE FINAL EXAM	

LECTURE EXAMS: There will be four exams that will be comprised of both multiple choice and short answer/essay questions. Exams will cover both lecture and reading material. If you miss an exam, you will receive a score of zero unless you take the make-up exam at the end of the semester.

SPECIAL NOTE TO ATHLETES OR OTHERS WHO WILL MISS AN EXAM FOR ACADEMIC REASONS: you MUST have a letter from your coach/advisor and you MUST notify me at least one week before the exam to make special arrangements.

MAKE-UP EXAM: This will be a comprehensive exam and is only for students who have missed a lecture exam (but not the final exam)!!! Only **ONE** exam will be given and so it will be comprehensive. Be prepared for this. It can not be used to substitute for a low score on another exam.

FINAL GRADES: 75% of your grade will be based on performance in lecture, 25% will be based on performance in the laboratory.

Lecture grade: Your lecture grade will be based on scores from the three unit lecture exams (45% of overall course grade) and one comprehensive final lecture exam (25% of overall course grade).

Laboratory grade: Your laboratory grade will be based on your performance in the laboratory. This score will be assigned to you by your lab instructor. If there is a large difference between the scores assigned by one instructor v.s. another, I reserve the right to curve the scores so that all lab sections are subject to about the same scale. The curve may raise or lower a person's grade, depending on the situation.

Quizzes: Unannounced quizzes will be given periodically in lecture. The scores (0-3pts, each) will be averaged and then added to your final class average (e.g. if you score 3pts on every quiz and if you take every quiz then a class average of 87...a B+...will increase to 90...an A-)

GRADING SCALE: 93-100% = A, 90-92 = A-, 87-89 = B+, 83-86 = B, 80-82 = B-, 77-79 = C+, 73-76 = C, 70-72 = C-, 67-69 = D+, 63-66 = D, 60-62 = D-, below 60% = F. I reserve the right to lower the scale slightly if class performance warrants such a change.

CHEATING POLICY: Cheating of any kind will not be tolerated. It will result in an F grade in the class and possible expulsion from the University.

LABORATORY INFORMATION

We have tried to design laboratory exercises that reinforce material being taught in lecture. When you study for lecture exams, think about what you've learned in lab; when you study for lab exams, think about the concepts you've learned in lecture.

ATTENDANCE: You are required to attend the lab section in which you are enrolled and the corresponding lecture section. THERE ARE FIVE (5) LECTURE SECTIONS OF BIO 105, LABELED A01C, B01C, C01C, ETC. YOU MUST ATTEND THE LECTURES THAT CORRESPOND WITH YOUR LABORATORY SECTION, (e.g. if you enroll for lab sections A01L-A07L, you must attend the A lecture.... not the B, C, D, or E lectures.) All students enrolled in a "B" section laboratory must attend Dr. Holton's lectures.

MISSED LABS CANNOT BE MADE UP EASILY. If you must miss your regularly scheduled lab you can try to attend another lab. It is YOUR responsibility to contact the instructor of that other lab section and confirm that you may participate in her/his lab section. Lab instructors are under no obligation to allow you into their lab. Below is a list of all of the lab sections and the instructors. IT IS ONLY POSSIBLE TO MAKE UP A LAB DURING THE SAME WEEK OF YOUR SCHEDULED LAB SECTION!!!

All of the lab sections being taught for Bio 105 are posted on (or near) the doors of the laboratory rooms: HS201 and 211.

LAB MATERIALS THAT YOU MUST PROVIDE:

1) 3-ring binder or folder for your lab manual; 2) 15cm ruler; 3) calculator; 4) #2 pencils and erasers; 5) note book paper

PLEASE READ INFORMATION ON THE NEXT PAGE ABOUT SUPPLEMENTAL INSTRUCTION. This class will have an SI instructor.

GUIDELINES FOR SUCCESS

Remember, your goal is to learn this information so that you will remember it for years!

- 1) Study consistently and frequently.** We estimate that students should study at least 2hr for every hour of lecture. It is MUCH better to study 30-45min every day than to study for five or six hours straight, once a week. AND the worst way to study is to cram day and night just before an exam. If you cram, you may do OK on the exam, but you'll forget what you've learned within days or a couple of weeks.
- 2) Constantly review old lecture material.** This course builds on itself. If you forget material from the first part of the semester, you will be lost in the middle and at the end of the semester.
- 3) Test yourself when studying!!! DO NOT STUDY BY READING OVER YOUR NOTES,** over and over again. Can you draw out or describe whole processes, by memory? Can you look at an unlabeled picture of a cell (for example) and describe everything that you see? This is the way to test yourself.
- 4) Pay attention in class and ask questions.** DO NOT a) talk to your neighbors, b) check your cell phone, c) surf the net. DO listen carefully a) to the lecture, b) to answers to questions that other students have posed.
- 5) Understand how the lab exercises relate to the lecture material.** You will learn a lot about the material covered in lecture by studying and thinking about what you do and see in lab.

Frequently Asked Questions about Supplemental Instruction (SI)

Brian Diedrich will be the SI for Fall 2012.

What is SI?

Supplemental Instruction (SI) consists of regular review sessions for students enrolled in difficult courses. SI provides a chance to get together with other students in your class to compare notes, discuss important concepts, develop strategies for studying, and test yourselves before your professor does so you can be ready for exams. The sessions are facilitated by a trained leader.

What is an SI leader?

SI leaders are students who have taken the class before and earned a high grade. They have been trained to lead study groups and are prepared to share with you what they have learned about how to study effectively for this course. They know the course content and will be in class with you every day, taking notes and listening closely to the professor. Your SI leader will provide two or three review sessions a week; you can attend one, two, or all three sessions. Your SI leader will also announce when there are special test review sessions.

How does it work?

At each SI session, you'll be guided through the concepts that have been covered in class or assigned as homework. Each session will be different because you'll have new material to discuss. Your leader's job is to help you think about the lectures you hear and the books you read, and then put it all together during SI sessions so you can learn it more efficiently. SI leaders do not re-lecture or give you their class notes. They won't do your homework or your thinking for you. Leaders will share with you the strategies they used to be successful in the course and will help you make the best use of your study time.

When do sessions start?

SI sessions usually start during the second week of classes. Your SI leader will keep you informed about the times and locations for sessions.

What does it cost?

SI is free. It costs you nothing except your time, so come as often as you like – the statistics show that the more you come, the better your grade! National research on SI and results here at UWO clearly show that students who attend SI sessions regularly average one half to one full letter grade higher than their classmates who choose not to attend.

What's in it for me?

Bring your notes; bring your textbook; bring your questions. SI is provided for all students who want to improve their understanding of course material and earn higher grades. If you attend SI regularly, chances are you'll earn a better grade. When you attend SI, you'll develop a better understanding of course content as well as more effective ways of studying. SI sessions are informal – you may even make a few friends as you learn. Since you have to study anyway, come to SI and make efficient use of your study time.

SI is provided by the Center for Academic Resources.