

Biology 117, General Biology: Cells, Genetics and Evolution

Section 02: MWF 11:30– 12:20

(08/31/2015)

COURSE DESCRIPTION:

An introductory course in the biological sciences covering cells, information coding and transfer, evolution, and diversity of unicellular organisms. This course will emphasize examples from both the plant and animal kingdoms using an integrated approach. Counts for general education only when taken with BIOL 116. Intended for science majors and other well-prepared students.

COURSE INSTRUCTORS:

Susan Bandoni Muench (bandoni@geneseo.edu)

ISC 257, phone 585-245-5309, office hours: Tuesdays, 1:30-3:20, Fridays 1:30-2:20 and by appointment.

Jani Lewis (lewisj@geneseo.edu)

ISC 354, phone 585-245-5310, office hours: Mondays 3 – 4:50 and Wednesdays, 3:30 – 5:20 pm and by appointment.

COURSE GOALS:

This course has two main objectives. The first is to increase your biological knowledge and prepare a firm foundation of knowledge for the courses that follow. The second objective is to help you develop the intellectual skills needed for advanced study of biology: to develop the ability to organize information from various disciplines, to fit it into a conceptual framework, to use it in the synthesis of new ideas and to understand how biologists think and approach scientific questions.

LEARNING OUTCOMES FOR BIOL. 117:

Upon completion of this course, students will be able to:

- Demonstrate knowledge and conceptual understanding for selected topics in the following content areas: chemistry of life, cellular structure and function, genetics, mechanisms of evolution and evolutionary history and biological diversity of unicellular organisms.
- Demonstrate readiness for intermediate course work in Biology through using and applying your knowledge and understanding in these same topics in biology through solving problems that call for recognizing correct relationships among variables, or for correctly predicting the outcome of alterations of these variables.
- Demonstrate an understanding of scientific processes through predicting correctly the outcome of an experiment, or through interpreting the results of an experiment.
- Demonstrate adjustment to college expectations through successful completion of course requirements including online tutorials, homework, reading quizzes and chapter review quizzes with increasing independence through the semester.

TEXTBOOK AND MATERIALS:

Textbook: Absolutely required for this course are the textbook (or eText) Biological Science by Freeman et al., Pearson Cummings Publisher and the MasteringBiology website access code. The course ID for MasteringBiology for this section is MUENCHLEWIS2015. Through the SUNY Geneseo bookstore you can buy a package that consists of the textbook with the MasteringBiology access code and several other texts that you will find helpful. These include: Get Ready for Biology, Practicing Biology: A student workbook for biological sciences, and the MasteringBiology + eText access codes. The ISBN for this combination is 1269437526. The bookstore also offers a package that does not include the hardcover textbook but

consists of simply access codes to the eText and the MasteringBiology website. If you choose to purchase your text elsewhere, you must also purchase access to the MasteringBiology website as you will have graded tutorials, quizzes and homeworks as well as many other helpful supplements. Students facing a delay in purchasing MasteringBiology because of a temporary and verifiable financial emergency should contact instructors to avoid losing credit for quizzes and homework.

Course materials: Other course materials will be available within the ANGEL CMS, myCourses (<http://my.geneseo.edu>). Self-help guides are available on the MyCourses website, <http://www.geneseo.edu/mycourses>. The Mastering Biology site is also linked from MyCourses, along with a guide to getting started there.

EVALUATION	
Graded work:	Contribution:
Exams (4 in class, including final)	75%
Day-to-Day activities (including reading quizzes and online homework)	25%

Evaluation (Additional information)
<p>Overview: One-quarter of your grade will come from keeping up with assigned readings, and from using the online supplements. For each chapter, there will be a reading quiz and a tutorial consisting of several independent components. In addition, there may be some in-class quizzes and some work products from group discussion in class. More information is provided about each component below. Most importantly, however, you must complete the day-to-day activities in order to earn a grade higher than a C.</p>
<p>Reading quizzes: Reading quizzes are short online assessments consisting mostly of multiple choice and other objective questions and covering each of the assigned chapters in the textbook. The role of the reading quizzes is to ensure that everyone has a common foundation of basic knowledge for class. This in turn will mean that we can employ active learning strategies, and we can spend more time on the more challenging topics that will better prepare you to take the exams. Reading quizzes represent a foundation, not an endpoint; earning a high grade on a reading quiz indicates you are well-prepared for class, but does not indicate that you are ready to take a test.</p> <p>Reading quizzes will usually open at 7:00 am the day before we begin a new chapter in the lecture. They will close at 10:00 am before lecture. A list of the quizzes and dates will be provided separately from this document but in general a quiz will be due before every other class period. Although deadlines are set in advance, the schedule MAY change, so watch your email and listen for announcements in class.</p> <p>Quizzes will be scored on a pass-fail basis. All scores greater than 60% will receive credit; scores less than 60% will not. The point of pass-fail grading is to keep the focus on preparing for class and not on the scores. A low score on the reading quiz should alert you to weaknesses in your current understanding. If you find you cannot read before taking a reading quiz, it is still worth taking the quiz. First, you might pass anyway, and second, even if you do not, this will allow you to rework quiz questions for practice before the test.</p>
<p>Tutorials: The tutorials offer an opportunity to interact with course content in a different way. The goal for the tutorials is to review the material and practice using it. This offers ways of studying beyond reading and rereading notes or text sections. Each tutorial is estimated to take about one hour. They are available from the first day of the quarter until two days before the test. They are open for a broad stretch of time for flexibility, but they are of greatest value to you if you do them before class or shortly after class. Unlike the quizzes, the tutorials allow you to choose a second answer if your first choice is incorrect. Like the quizzes, you may rework tutorials for practice, so it is worth doing them even if you do not have time to get the highest possible score. In addition, some of the tutorials will provide an “adaptive follow-up” which is meant to give you extra practice on items that you may have found difficult</p>

to answer. We cannot delay the closing of the tutorials because all must be completed before they can be opened for review. Leaving tutorials till the last minute is a bad idea because you may not have time to complete them, and you must complete them to be able to rework for practice.

Practice tests: In the MasteringBiology, there are practice tests for each chapter. These will not generally be graded, but will help you assess how well you have learned the subject matter for the tests. We will also provide copies of old exams for review.

In-class work products or questions: Some days we will use survey technology in class to record participation. The TopHat software that we use will allow you to respond with your laptop, tablet or phone. Other days, we may collect a work product from small group discussion. These participation scores are designed to encourage in class participation and interactive learning. We believe that active engagement in the classroom, even in large classes such as this, enhances student learning and will help you achieve a better understanding and retention of the material.

Exams: There will be four exams, weighted equally, for 75% of your final grade. Each exam will cover roughly one-quarter of the course and consist of multiple-choice questions. The first three exams will be during class time (see syllabus). The fourth quarter exam will be given during the final exam period and will cover only the fourth quarter material. Although there is no comprehensive exam in this class, the material is naturally cumulative, and you will not succeed in learning later topics if you have not mastered earlier topics. For example, understanding evolutionary biology in the fourth quarter depends on having a good foundation of genetics learned in the second and third quarters.

Grades: You will be able to track your performance through the semester using the MyCourses and MasteringBiology gradebooks. Use the MasteringBiology gradebook to monitor your progress with the quizzes and tutorials. Remember that you need at least a score of 60% on each of these to have them count towards your grade. Note that we do not schedule make up quizzes, tutorials and in-class assignments for any reason. There are enough points offered per quarter to allow you to drop 2 -3 assignments without penalties. It is therefore up to you to monitor your progress with these assignments and take into consideration the possibility of sports activities, sickness and family emergencies that may occur during the semester before electing to miss quizzes, tutorials or class participation opportunities. The gradebook in MyCourses can be used to track your progress toward your overall grade each quarter. Use the Reports tab in MyCourses to get a detailed look at your progress to date. Grades will follow the following point distribution, usually without adjustment or "curving:"

>92% = A	90-92% = A-	87-89%, = B+	83-86% = B	80-82% = B-
77-79% = C+	73-77% = C	70-72% = C-	60-69% = D	<60% = E.

Note that there are no extra credit assignments or other methods of adjusting the final grade for any reason.

COURSE ASSISTANCE: There are many ways of obtaining help in Biology 117, but all involve your taking the first step. Here are your options:

- **REVIEW SESSIONS:** Voluntary review sessions are held every Tuesday afternoon 3:30 pm-4:20 pm in Newton 213. In addition to answering questions based on the lecture material and homework assignments, we can also use the voluntary review sessions to 1) answer any questions that you might have about the reading assignments; 2) assist you with study skills using specific examples drawn from the course material; and 3) discuss test taking strategies.

- **TUTORS:** Tutoring provides flexible assistance to individuals or small groups that is centered around student questions. A tutor can also answer questions about study skills. The tutoring schedule will be announced in class and posted in the labs and by the instructors' doors.
- **SUPPLEMENTAL INSTRUCTION:** Supplemental instruction (SI) will also be available for this class. The SI sessions are structured, student-led reviews of content that incorporate study skills. Devon Brewster is the SI leader for this section. Additional information will be provided during the first week of class.
- **OFFICE HOURS:** Both professors have regularly scheduled office hours in order to provide assistance one-on-one or to small groups of students. We welcome the opportunity to provide assistance outside of class. Please direct your questions about course content to the instructor who has lectured on the particular topic, and direct questions about general course issues such as making up exams to the instructor who is not lecturing at the moment.

GENERAL ASSISTANCE: The College provides many support services for any issues that are affecting your academic performance. The following table outlines problems you may encounter during the semester and people to consult if this occurs:

Help resources	Problems
Dr. Leonard Sancilio, Dean of Students	family emergencies or health issues that will keep you out of class for a significant period of time
Health Center	physical and mental health
Counseling Center	problems adjusting to college, homesickness, making difficult decisions as well as traditional mental health diagnoses such as depression, anxiety or eating disorders
Dr. Tabitha Buggie-Hunt	services for students with disabilities
Dr. Irene Belyakov	Assistance with English fluency

Important dates to keep in mind:

Sept. 04 Drop/Add Period Ends
 Sept. 07 Labor Day - no class
 Oct. 12 Fall Break – no class
 Oct. 21 Midsemester
 Nov. 11 Last day to withdraw from full semester courses
 Nov. 25 - 27 Thanksgiving break - no classes
 Dec. 14 Last day of regularly scheduled class
 Dec. 17 Final Exam 8:00 – 11:00 am

TENTATIVE SCHEDULE		
DATE	In Class - TOPIC	Outside Class - (also see separate handout for exact dates).*
08/31	Introduction to Biol 117. Please bring your laptop or a printed copy of this syllabus with you today!	
09/02	Chapter 1: Biology and the Tree of Life. Life: the Final Frontier Bring: copy of case study	Chap. 1 and quiz; tutorial to follow
09/04	Chapter 2 & 3 and Part 1 of Case study: "Sickle Cell Anemia: A fictional reconstruction" Bring: copy of case study	Chap. 2 & 3 before class. Mastering Tutorial Quiz on Chap. 2 & 3 Closes Sept. 7 at 11:59 pm
09/07	No classes - Labor Day	
09/09	Chap. 6.1, 6.2, 6.3, 6.4, 7.3, 7.4 and Part II of case study.	Chap 6, sections 1, 2, 3, & 4 and Chap 7 all sections before class and Mastering Tutorial. Quiz on Chap. 6 & 7 all sections Closes Sept. 9 at 10:00 am.
09/11	Part V of case study, and Chap. 7.5 and 7.6	
09/14	Chap. 8.1, 8.2 and 8.3: Driving nonspontaneous reactions and Enzymes. Start Case study of Patrick Paralyzed	Chap 8, all sections and Mastering Tutorial. Quiz on Chap. 8 all sections Closes Sept. 14 at 10:00 am.
09/16	Chap. 8.4 and 8.5: Enzymes and metabolic pathways.	
09/18	Finish Case study of Patrick Paralyzed. Tie up loose ends.	
09/21	Exam I Chapters 1, 2, 3, 6, 7 and 8.	
09/23	Chapter 12 – Cell cycle - Case study: But I'm Too Young: A Case Study of Ovarian Cancer	Chapter 12 quiz due before class at 10 am. Tutorial closes Oct.14 at 11:55 pm.
09/25	Chapter 13 – Meiosis - Case study: Baby Doe v. The Prenatal Clinic	Chapter 13 quiz due before class at 10 am. Tutorial closes Oct.14 at 11:55 pm.
09/28	Chapter 13 – Meiosis - Case study: Cross Dressing or Crossing Over: Sex Testing of Women Athletes	
09/30	Chapter 14 – Mendelian Genetics - Mendel Dreams: The Beginning of Genetics	Chapter 14 quiz due before class at 10 am. Tutorial closes Oct. 14 at 11:55 pm.
10/02	Chapter 14 – Mendelian Genetics - Case study: Bloodline: A Human Genetics Case	
10/05	Chapter 14 – Mendelian Genetics - Case study: The 'Wolfman' and the Chromosomal Basis of Heredity	
10/07	Chapter 4, Nucleic acids. Chapter 15 – DNA and the Gene - Case study: Classic Experiments in Molecular Biology	Quizzes on Chapter 4 and Chapter 15 due before class at 10 am. Tutorials close Oct. 14 at 11:55 pm.

10/09	Chapter 15 – DNA and the Gene - Case study: Putting the Pieces Together	
10/12	Fall Break – No class	
10/14	Chapter 16 –	Chapter 16 quiz due before class at 10 am. Tutorial closes Nov. 14 at 11:55 pm.
10/16	Exam II Chapters 4, 12, 13, 14, 15.	
10/19	Chapter 16 – How Genes Work. -	Chap 5 & Chap 11, all sections before class and Mastering Tutorial. Reading quiz on Chap. 5 and 11
10/21	Case Study. Chap. 11.3 and 11.4: Cell communication and signaling pathways.	
10/23	Case Study Chap. 9.1, 9.2 and 9.3: Overview and details of cellular metabolism.	Chap 9, all sections before class and Mastering Tutorial. Reading quiz on Chap. 9
10/26	Case Study Chap. 9.4, 9.5 and 9.6: Respiration and fermentation.	
10/28	Case Study Chap. 10.1, and 10.2: Intro. to photosynthesis.	Chap 10, all sections and Mastering Tutorial. Reading quiz on Chap. 10
10/30	Case Study Chap. 10.2, 10.3, & 10.4 Photosynthesis, details and sugar production.	
11/02	Finish and compare respiration and photosynthesis.	Mastering Tutorial catch up time.
11/04	Case Study Chap. 17.2, and 17.3: RNA processing and translation. Chap. 17.4 and 17.5: tRNA and ribosomes	Chap 17, all sections before class and Mastering Tutorial. Reading quiz on Chap. 17
11/06	Chap. 18.1, 18.2 and 18.3: Gene regulation overview and more.	Chap 18, sections 1,2 & 3 before class and Mastering Tutorial. Reading quiz on Chap 18, sections 1, 2 and 3.
11/09	In class problems. Chap. 18.4 and 18.5: Negative versus positive transcriptional regulation.	
11/11	In class problems. Chap. 19.1, 19.2 and 19.3: Gene regulation general and details.	Chap 19, all sections before class and Mastering Tutorial and Reading Quiz, Chap. 19 all sections.
11/13	Case Study Chap. 19.4, 19.5 and 19.6: Post-transcriptional regulation, comparisons in bacteria vs. eukaryotes	
11/16	Exam III Chapters 9, 10, 11, 17, 18 and 19.	
11/18	Chapter 25 – Evolution by Natural Selection. Case study: Selection and the blond beach mouse.	Chapter 25 quiz due at 10 am. Tutorial due 12/15 at 11:55 pm.
11/20	Chapter 25 continued –	
11/23	Chapter 26 – Evolutionary Processes. PKU Carriers: How Many Are in Your	Chapter 26 quiz due at 10 am. Tutorial due 12/15 at 11:55 pm.

	Hometown?	
11/25	No classes - Thanksgiving Break	
11/27	No Classes - Thanksgiving Break	
11/30	Chapter 26 – Evolutionary Processes. PKU Carriers: How Many Are in Your Hometown?	
12/02	Chapter 27 -- Speciation. Case study: What is a Species? Speciation and the Apple Maggot Fly	Chapter 27 quiz due at 10 am. Tutorial due 12/15 at 11:55 pm.
12/04	Case study: Blood suckers	
12/07	Chapter 28 - Phylogenetics and the History of Life	Chapter 28 quiz due at 10 am. Tutorial due 12/15 at 11:55 pm.
12/09	Chapter 28 - Phylogenetics and the History of Life. Case study: A tale of three lice.	
12/11	Chapter 28 - Phylogenetics and the History of Life	
12/14	Review	
12/17	Final Exam Chapters 16, 25, 26, 27 and 28, 8:00 – 11:00 am	

Note: The schedule of topics may be subject to change. If so, the content coverage of exams will be adjusted, rather than the exam dates.

*A complete listing of all of the quizzes and tutorials, the dates that they open, the due dates and the dates of the exams can be found in the separate assignment list.

IMPORTANT POLICIES FOR BIOLOGY 117

Accommodations: SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional, or cognitive disabilities. Accommodations will also be made for medical conditions related to pregnancy or parenting. Students should contact Dean Buggie-Hunt in the Office of Disability Services (tbuggieh@geneseo.edu or 585-245-5112) and their faculty to discuss needed accommodations as early as possible in the semester.

Students who have been using English as their primary language of instruction for less than 6 years and who are taking active steps to improve their English (such as enrolling in Writing 101 or 201) can have extra time for taking exams in this section of Biol. 117 by special arrangement.

Professional behavior in the classroom: Your choices in lecture affect the learning experiences of other students in the class as well as your own. While this is true for any college class, the problems are especially acute in very large classes like Biology 117. Please arrive on time, stay throughout class, and limit conversation in class to directed class discussion. Mute your laptop and silence or turn off your phone. If you have an emergency for which you need your cell phone to be turned on, or for which you must leave early, let the instructor and the people sitting around you know as a courtesy. The use of technology in class has many educational benefits, and using laptops, phones or other technology for viewing class materials during lecture is permitted. Texting, use of social media, checking e-mail, shopping, playing games and other non-class related uses of technology not only reduce your class participation, they can also distract those around you. If you disrupt the lecture or are distracting others

around you, you may be asked to leave. If the behavior of other students around you is affecting your learning, let them know, and please tell us as well.

Communication: Check your e-mail daily in order to ensure that you receive reminders of quizzes, and because changes in schedule are sometimes necessary. E-mail is also usually the fastest way to get in touch with us. Please include your name and Biol. 117 in all e-mails sent to us as we each receive hundreds of emails from students per day. Please recognize also that we have responsibilities outside of our classes, and emails sent at night or on weekends may not be answered immediately.

Missing exams: All four exams are required, and making up an exam requires a valid excuse. Examples of valid reasons for missing exams include (but are not limited to) personal illness, death or serious illness in the family, representing the college, religious observances, and required training for work or military service. Where possible, discussion of alternative arrangements should take place ahead of the exam. For emergencies arising on the day of the exam, you need to contact us within 24 hours to arrange an alternative time to take your exam. In fairness to other students, you have an obligation to make up your test at the earliest possible opportunity.

Missing quizzes, tutorials and participation: Because there are more opportunities to earn points through quizzes, tutorials, and participation than there are points available, there is no opportunity to make these up. In general, one quiz, one tutorial and 1-2 days of participation scores will be dropped per quarter. It is therefore not possible to make up for a poor score on the day-to-day component in one quarter with a higher score in another quarter. Use the option to drop the activities from MasteringBiology sparingly as if you elect to skip a quiz but then have a genuine emergency later, we will not drop additional points. If you will be absent and unable to complete the online activities for two weeks or more, please contact us along with the Dean of Students.

Appealing grades: Any graded work may be submitted for re-evaluation along with a written appeal. The basis for your appeal will usually be either (1) ambiguity in class notes or reading materials, or (2) ambiguity in the test question. The appeal should contain a brief written explanation of your concerns, including your reading of the ambiguous written material, and why you answered the question the way that you did. Appeals should be turned in within one week of receiving the graded work. When you submit your written appeal, we will schedule an individual conference to discuss it.

Academic dishonesty: Academic dishonesty includes both cheating on exams and online quizzes and tutorials as well as misrepresenting your identity for exams or for class participation. Cheating here refers to violating the rules of quizzes and exams, including collaboration, copying from other students' work, or consulting outside sources. Misrepresenting your identity includes taking online quizzes for others or having them complete assignments for you, having another person earn participation points for you, or sending another person to take your exam. Because of the role of Biology 117 as an entry point to the Biology major, you must be able to present identification during exams. The penalty for cheating or misrepresenting your identity will be a grade of zero on the quiz or exam involved. Because academic dishonesty is defined in detail here, claiming ignorance of the policies cannot serve as an excuse.

Policy limitations: Policies are designed to address common issues and concerns. We cannot anticipate every possible problem that may arise, and therefore policies can have limits and exceptions! If you are experiencing problems in completing class work for any reason, please drop by office hours or make an appointment to talk with one of us.

VERY IMPORTANT INFORMATION ABOUT POLICIES FOR THE BIOLOGY MAJOR:

Students entering Geneseo in the Fall of 2013 (either as incoming freshman or as transfer students) and students wishing to become Biology/Biochemistry majors in the Fall of 2013 *or later* are 'premajors' in Biology/Biochemistry. To be able to declare a major in Biology/Biochemistry premajors must first earn at least a C+ average (2.3 GPA) in their first two required biology lecture courses taken at Geneseo. For most students this would be BIOL 117 and 119. Students unsure of their readiness for college science may choose to start with BIOL 105/106 as a preparatory course before taking BIOL 117/119.

[Note that although you can repeat courses if you withdraw or earn a D or E you cannot repeat courses with a C- or C and earning these grades in a 'premajor course' makes it difficult to achieve a C+ average and to become a Biology/Biochemistry major.]