BIOLOGY 101	INTRODUCTION TO BIOLOGY A	FALL 2016

Instructors:

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TBA

Lectures: MWF 1-1:50 Location: Leidy Labs Room 10
[http://www.facilities.upenn.edu/maps/locations/leidy-laboratories-biology]

Description: General principles of biology focusing on the basic chemistry of life, cell biology, molecular biology, and genetics in all types of living organisms. Particular emphasis will be given to links between the fundamental processes covered during the course and current challenges of humankind in the areas of energy, food, and health.

Textbooks:

- *Campbell Biology, Second Custom Edition for the University of Pennsylvania* (2014). Reece et al., Pearson Educ., 10th ed.
- The *Laboratory Manual (Biology 101)* should be downloaded chapter by chapter from the course Canvas site.

Canvas and email: The BIOL 101 Canvas site will contain a great deal of information pertinent to this course including the course syllabus, lecture schedule, lecture recordings, PowerPoint slide sets from class, old exams, further readings and links to useful web-based resources. Only students registered for this course have access to the Canvas site. This site will be updated often so be sure your Canvas Notification Preferences enable you to keep up with these updates. If you cannot access the BIOL 101 Canvas site and you are certain that you are registered for the course (check PennInTouch) contact our Head TA.

Occasionally we will distribute messages or documents to everyone by email. Since we will use both the course listserv and Canvas for this purpose, be sure that the email address listed on PennInTouch is the one you look at regularly or that it is forwarded to your preferred email address. If you have no email address listed on PennInTouch you will not receive course emails.

Grades and Exams: A perfect score for BIOL 101 is 450 points: 300 points from the class component and 150 points from lab. There are three midterm exams scheduled during the

semester plus a cumulative final exam. Each exam is worth 100 points. The lab score (quizzes and assignments) total 150 points. Details will be given during the lab sessions.

Final grade calculation: We will first normalize class grades for the three midterm exams to the same mean score (as these means change from exam to exam). The lowest of your three normalized midterm scores will be dropped in calculating your final grade. Your two best midterm exam scores, together with your final exam score and your total lab score will be used in computing your overall course numerical score. Since only two of the three midterm exams will be included in the calculation of your final grade, no make-up midterm exams will be given. A missed exam will be the one whose grade is dropped. You are strongly encouraged to take all three midterm exams.

Resources for succeeding in BIOL 101: The course covers a great deal of material in a short time! The most important strategy for success is to keep up with the work on a regular basis. While we post our lecture slides and the lectures are recorded, it is important to attend class and be an active participant. After class, it is very useful to go over your lecture notes later in the day to clarify your notes and consolidate your learning while the material is still fresh in your mind. It is very important to accomplish the assigned background reading before attending class, because the lecture will cover only some of the material we expect you to be able to draw upon. Students often ask how to study for exams. The best thing to do is to keep up with the material before the exam, and then study with other students before the exam. Test yourself and test your fellow students. If you can answer the questions your friends ask you, you have a good chance of being able to answer the questions we ask you. If you encounter difficulties, feel free to see the faculty (do not be shy!). The faculty instructors are here for help with the subject matter and for advice. You can also turn to your TA if you feel more comfortable. In addition, you can contact Penn's Office of Learning Resources (http://www.vpul.upenn.edu/lrc/lr/) and the Tutoring Center (http://www.vpul.upenn.edu/tutoring/index.php) for help with studying and test-taking skills and for tutoring.

Date				Topic	Reading (Reece *et al.*)
31-Aug	W	G/P		Introduction: evolution and the diversity of life	1.1-1.2
			Biochemistry of Life		
2-Sep	F	P		Chemistry of life: atomic structure, chemical bonds, water, p	2, 3
5-Sep	M			Labor Day (no class)	
7-Sep	W	P		Large molecules: proteins, carbohydrates, lipids, DNA	4, 5
9-Sep	F	P		Membranes and cell compartments	6.1 - 6.5, 7
12-Sep	M	P		Metabolism: energy and enzymes	8
14-Sep	W	P		*Chemistry of milk*	
16-Sep	F	P		Respiration and fermentation	9
19-Sep	M	P		Photosynthesis	10
21-Sep	W	P		Energy and ecosystems	55
23-Sep	F	P		*Biofuels: the solution to the energy crisis?*	
			Genetics		
26-Sep	M	P		Chromosome structure and transmission: mitosis, meiosis	12.1 - 12.2, 13
28-Sep	W	P		Genes and genomes	21.3 - 21.4
30-Sep	F			***Exam 1***	
3-Oct	M	P		Mutations, polymorphisms	21.5 - 21.6
5-Oct	W	P		Mendelian Genetics	14.1 - 14.2
7-Oct	F			Fall Break (no class)	
10-Oct	M	P		Genetic interactions: dominance, epistasis, etc.	14.3
12-Oct	W	P		Natural genetic variation: complex traits	14.3
14-Oct	F	P		Chromosomal basis of inheritance: linkage and recombinatic	15.1- 15.3
17-Oct	M	G		Cytogenetics: variation in chromosome structure and numbe	15.4
19-Oct	W	P		*The genetics of food*	
			Molecular Biology		
21-Oct	F	G		Molecular basis of inheritance	16.1
24-Oct	M	G		DNA replication: the process	16.2
26-Oct	W	G		DNA replication: the enzymes	16.2
28-Oct	F	G		Gene expression: mRNA transcription	17.1 - 17.3
31-Oct	M	G		Gene expression: Protein translation	17.4 - 17.5
2-Nov	W	G		Gene isolation & manipulation	20.1
4-Nov	F	G		Gene regulation in prokaryotes	18.1
7-Nov	M			***Exam 2***	
9-Nov	W	G		Gene regulation in eukaryotes-I	18.2
11-Nov	F	G		Gene regulation in eukaryotes-II	18.4
14-Nov	M	G		Chromatin & epigenetics	16.3, 18.3
16-Nov	W	G		Genome analysis	21.1 - 21.5
18-Nov	F	P		*The genetics of human disease*	
			Cell Biology		
21-Nov	M	G		Cells & cell types	6.1
23-Nov	W	G		Intracellular compartments and transport	6.2, 6.3, 6.4
25-Nov	F			Thanksgiving (no class)	
28-Nov	M	G		Cytoskeleton and cell movement	6.6, 50.5
30-Nov	W	G		Cell-cell communication	11.1-11.4
2-Dec	F	G		Cell cycle	12.1-12.3
5-Dec	M	G		Machinery of mitosis	tbd
7-Dec	W	G		Cell differentiation and stem cells	18.4, 20.3
9-Dec	F	G		*Developmental biology: From single cell to organism*	18.4, 21.6
12-Dec	M			***Exam 3***	
19-Dec	M			***Final Exam noon- 2 (tentative)***	

BIOLOGY 101 LAB POLICIES, FALL 2016

LAB ATTENDANCE: **Attendance is required in this course**. **Students are permitted to miss class for legitimate medical reasons only or University recognized religious holidays, but the student must arrange a makeup lab within the same week**. Excessive or unexplained absences will result in a reduction in your course grade. There are no "excused absences" – if you miss class, you are responsible for making up any work, and for knowing the material covered.

Any absences need to be reported through the Course Absence Report (CAR) system. Students can access the CAR system from Penn InTouch**.**

In addition, you must also contact your Lab Instructor in order to coordinate a make-up lab. Your Lab Instructor can be reached by e-mail, or you can find him/her at lecture, or visit during her/his office hours. **Please note that make-up labs can only be scheduled during the week the lab session is taking place.** Thus, it is of the utmost importance that you coordinate your make-up session in a timely matter. Failure to coordinate a makeup session will lead to a zero for the assignments that were due the week that the lab was missed.

Do not simply show up to another section without informing your Lab Instructor; no points will be given for lab work done or assignments turned in at another section without prior approval. Students missing lab because of religious holidays or other approved events are required to consult with their Lab Instructor at the beginning of the academic semester to arrange for a temporary lab transfer for the scheduled absence.

LAB GRADING

QUIZZES: Unannounced quizzes will be given during the first 10 minutes of the lab period. These quizzes will cover the previous week's lab and the reading and pre-lab material for the current week's lab, so it is important that you read the lab manual chapter each week and come prepared for a quiz. There will be 9 quizzes worth 10 points each over the course of the semester, and the lowest quiz score for each student will be dropped. If you miss a lab, and have not contacted your Lab Instructor to obtain permission in advance, the quiz score for that lab will be the one that will be dropped in computing your final grade.
(80 points)

GENETICS PROBLEM SET: A set of questions covering genetic concepts explained in lecture will be posted to the course Canvas site. **(10 points)**

LAB ASSIGNMENTS: Written lab assignments are part of the total lab grade. See the schedule of assignments below. **(60 points)**

TOTAL LAB SCORE: 150 points

LAB ASSIGNMENTS

Lab Skills In-lab: Nile blue graph and answers to questions **(5 points)**

Lab Skills Post-Lab: pNP standard curve and line values **(5 points)**

Enzyme Kinetics Post-Lab: Graphs and answers to questions on post-lab assignment **(10 points**)

Photosynthesis Post-lab:. Data analysis and answers to questions in post-lab assignment. **(5 points)**

Genetics of *Arabidopsis thaliana* Post-lab: Tables 2 through 6, answers to all questions in lab post-lab assignment, and overall class data analysis. **(10 points)**

UV Irradiation Week 2 Post-lab: Analysis of overall class data results **(10 points)**

Tn Mutagenesis Week 2 In-lab: Analysis of results and restriction analysis design **(5 points)**

Tn Mutagenesis Week 4 In-lab: Analysis of results **(10 points)**

Week	Date	Lab Topic
NO LABS	Week of 30-Aug	**NO LABS**
1	Week of 5-Sep*	Microscopic Examination of Cells
2	Week of 12-Sep	Lab Skills
3	Week of 19-Sep	Enzyme Kinetics
4	Week of 26-Sep	Photosynthesis
NO LABS	**Week of 3-OCT**	**NO LABS-Fall Break**
5	Week of 10-Oct	Genetics of *Arabidopsis thaliana*, part 1
6	Week of 17-Oct	Genetics of *Arabidopsis thaliana*, part 2 + Mitosis and Meiosis
7	Week of 24-Oct	UV Irradiation Session 1
8	Week of 31-Oct	UV Irradiation Session 2
9	Week of 7-Nov	Tn Mutagenesis Session 1
10	Week of 14-Nov	Tn Mutagenesis Session 2
NO LABS	Week of 21-Nov	**NO LABS-THANKSGIVING BREAK**
11	Week of 28-Nov	Tn Mutagenesis Session 3
12	Week of 5-Dec	Tn Mutagenesis Session 4

***Students enrolled in the Monday lab sections will be rescheduled to an alternate time for the week of 5-SEP due to the Labor Day holiday.**