

Biology 2110c Fall 2022 Syllabus



Course at a glance
Molecular and Cellular Biology, section 501
Tuesdays and Thursdays, 9:00-10:15
Valencia Arts and Sciences room 129

Welcome to Molecular and cellular biology! This class covers introductory concepts vital for science majors as well as relevant topics to molecular and cellular biology including; the scientific method, the role of water in cell biology, carbon and molecular diversity, macromolecules, introduction to metabolism, a tour of cell structures and functions, membrane structure and function, cellular respiration, photosynthesis, cell communication, and the cell cycle.



Course Learning Objectives:

- 1.) Students will display an understanding of the logic of scientific research (Chapter 1).
- 2.) Students will show comprehension of natural selection as the unifying theory of biology.
- 3.) Students will exhibit familiarity with basic biological chemistry including the importance of water and the principles of metabolic reactions and pathways (Chapters 2-6).
- 4.) Students will demonstrate knowledge of cell structure including organelles, membranes, and cell-cell communication (chapter 7).
- 5.) Students will be able to describe the flow of energy in cells through photosynthesis and cellular respiration (Chapters 8 & 9).

The goal of this class is to help you become literate in these scientific concepts and be able to apply them in biology as you move forward.

Instructor: Ben Flicker, Ph.D.

Office: HS 100B

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Email is the best contact

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Drop-in hours*:
Mondays: 10:30-12:00
Tuesdays 1:30-3:00
Wednesdays: 10:30-12:00
Thursdays: 12:00-1:30
*And really, anytime my door is open outside of these times.

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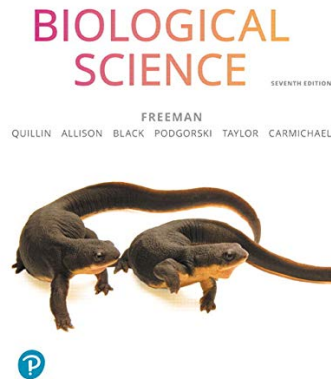
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Course Webpage:

We will be using the new Canvas platform this year, canvas.unm.edu. This will largely serve as a repository for documents that will be handed out physically in class (the syllabus, homework assignments, class activities, etc). Downloadable copies of the lecture slides will be available here as well. You will mostly be able to find these items in the 'files' tab of the course Canvas page.

Textbook:

Biological Science, Scott Freeman, Kim Quillin, Lizabeth Allison, Michael Black, Greg Podgorski, Emily Taylor and Jeff Carmichael. 2017. 7th edition, Pearson Higher education.



Hi all,
Welcome to biology 2110c! I am a molecular and evolutionary biologist, specializing in plant evolution and systematics. Currently, my research interests include systematics of Piñon pine in New Mexico as well as the microbial diversity in the Middle Rio Grande. When I am not working, I love music and running. I am excited to work with you all this fall!

Tips for Success in this Course:

- Read the sections of the book covered in each class.
 - Complete homework assignments before the quizzes over that chapter.
 - Actively participate in your group.
- Communicate with instructor in the case of absence.



COVID-19 Health and Awareness: UNM is a mask friendly, but not a mask required, community. To be registered or employed at UNM, Students, faculty, and staff must all meet UNM's [Administrative Mandate on Required COVID-19 vaccination](#). If you are experiencing COVID-19 symptoms, please do not come to class. If you have a positive COVID-19 test, please stay home for five days and isolate yourself from others, per the [Centers for Disease Control \(CDC\) guidelines](#). If you do need to stay home, please communicate with me via email (emailaddress@unm.edu) or Canvas course messaging; I can work with you to provide alternatives for course participation and completion. UNM faculty and staff know that these are challenging times. Please let us know that you need support so that we can connect you to the right resources and please be aware that UNM will publish information on websites and email about any changes to our public health status and community response

Course Graded Assignments:

Homework: ~Weekly homework assignments will be given. These will serve as chapter summaries to prepare you for each chapter's quiz and exam. 10 total assignments will be given with each assignment worth 10 points each. They will be due by the exam over the material they cover (for example, the chapter 2 homework will be due by the date of the first exam).

Exams: 4 exams will be given. The first 3 will be worth 100 points each. The final exam will be cumulative, comprised of new material covered since the third midterm as well as all previous material. The final exam will be worth 150 points.

Quizzes: _____

Class Participation: Class participation; both in whole-class discussions and group work are essential to this course. As such, 70 of your 800 points possible in the course will come from class participation. These points will be allotted based on: Regular attendance, being engaged in classwork, actively taking notes in class, and completion of group activities.

ECURE: Regular participation and completion of the ECURE assignments is expected. These will include a mixture of lab and written work. Some of this you will complete in the lab period, others will require work outside of class time.

Title IX: Our classroom and our university should always be spaces of mutual respect, kindness, and support, without fear of discrimination, harassment, or violence. Should you ever need assistance or have concerns about incidents that violate this principle, please access the resources available to you on campus. Please note that, because UNM faculty, TAs, and Gas are considered "responsible employees" by the Department of Education, any disclosure of gender discrimination (including sexual harassment, sexual misconduct, and sexual violence) made to a faculty member, TA, or GA must be reported by that faculty member, TA, or GA to the university's Title IX coordinator. For more information on the campus policy regarding sexual misconduct, please see:

<https://policy.unm.edu/university-policies/2000/2740.html>.



100 points: Homework assignments (10 @ 10 points each)

50 points: In class activities/class participation

100 points: Quizzes

300 points: Exams (3 exams @ 100 points each)

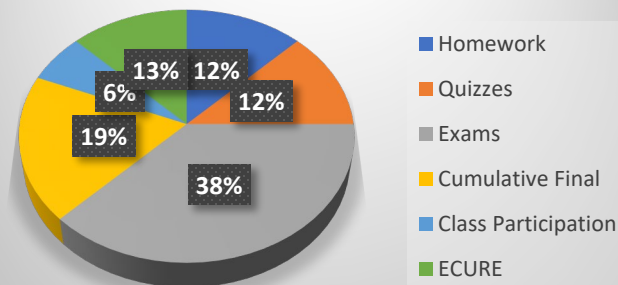
150 points: Cumulative final exam

100 points: ECURE assignments & Participation

= 800 Total points

100%=A+, 92-99=A, 90-91=A-, 89=B+, 82-88=B, 80-81=B-, 79=C+, 72-78=C, 70-71=C-, 69=D+, 62-68=D, 60-61=D-,

Grade proportions



ECURE:

This semester, this section will be completing a CURE (Course-based Undergraduate Research Experience). The goal of this program is to increase exposure of research to more undergraduate students than are typically able to have traditional research experiences. Research has shown many benefits to these experiences including improved retention, increased sense of belonging and an increased interest in science. During this semester, working in groups, each group will complete a research project that will aim to uncover novel information in the field of biology. This project will be composed of four phases:

- 1.) Prep: Background research to define a problem that you will investigate this semester.
- 2.) Perform: Conduct the experiments to test your hypothesis.
- 3.) Analyze: Interpret the data that you collect in your experiment.
- 4.) Present: Share your findings with the class.

During the semester, you will be guided by your instructor in how to carry-out each step. I will aid you in all these phases to make sure that your project is doable, that you are managing your time well, and that you are using proper means to address your problem and analyze your data.

CURE learning Map:

Learning Goals:	Learning Objectives:	Evidence from Learning Activities
1.) Gain necessary skills in implementing the scientific method.	1.) Students will be able to find relevant literature for a given topic.	1.) Prepare a bibliography for their presentations.
2.) Gain appreciation for modern biological research methods	1.) Students will be able to extract biological molecules from fresh plant material. 2.) Students will be able to analyze and interpret results of experiment.	1.) Collection of plant samples. 2.) Description of the characteristics and molecules of foods in human nutrition.
3.) Share knowledge gained to a broader population.	1.) Students will be able to prepare an organized and clear presentation of their project. 2.) Students will be able to describe their research project.	1.) PowerPoint presentation to class of results. 2.) Group assessment. 3.) Peer assessment.



Dates	Subjects covered	Homework/ Quizzes
8/23/22	Course Introduction, Chapter 1	Homework 1
8/25/22	Chapter 2: Chemical bonds and Reactions	
8/30/22	Chapter 2: Chemical Bonds and Reactions	Homework 2
9/01/22	Chapter 2: The Chemistry of Water	
9/06/22	Chapter 3: Amino Acids	
9/08/22	Chapter 3: Proteins	
9/13/22	Chapter 3: Protein Structure	Homework 3
9/15/22	Exam Review	
9/20/22	Exam 1	Homework 4
9/22/22	Chapter 4: Nucleotides	
9/27/22	Chapter 4: Nucleic acids	
9/29/22	Chapter 5: Carbohydrates	
10/04/22	Chapter 5: Carbohydrates	Homework 5
10/06/22	Chapter 6: Lipids	
10/11/22	Chapter 6: Lipids	Homework 6
10/13/22	Fall Break: No Class	
10/18/22	Chapter 6: Membrane Structure and Function	
10/20/22	Exam Review	
10/25/22	Exam 2	Homework 7
10/27/22	Chapter 7: Prokaryotic Cells	
11/01/22	Chapter 7: Eukaryotic Cell Structures	
11/03/22	Chapter 8: Endergonic and Exergonic Reactions	

11/08/22	Chapter 8: Enzymes	Homework 8
11/10/22	Chapter 9: Glycolysis and the Citric Acid Cycle	
11/15/22	Chapter 9: The Electron Transport Chain	Homework 9
11/17/22	Exam Review	
11/22/22	Exam 3	
11/24/22	No Class: Thanksgiving Holiday	
11/29/22	Chapter 10: The light-dependent Reactions	
12/01/22	Chapter 10: The light-independent Reactions	
12/06/22	Chapter 10: Carbon fixation	Homework 10
12/08/22	Final Exam Review	
12/13/2022	Cumulative Final Exam	