

Instructor: Craig L. Moyer
Email: cmoyer@hydro.biol.wvu.edu
Web page: <http://fire.biol.wvu.edu/cmoyer/cmoyer.courses.html>
Office Hours: MWF, 1-2pm; and by Appt., BI 409
Lecture: MWRF, 12:00 to 12:50pm, ES 410
Labs: T & R, 2-5pm, BI 261
Graduate TAs: Richard Davis and Rachel Zack

Required Texts:

1. Campbell & Reece, Biology, 7th Edition
2. Biology 205 Laboratory Manual (available at Bookstore)

Prerequisites:

Biol 204, Chem 121 or 125; pre/coreq Chem 122 or 126

Course Goals: As the first course in the biology curriculum at WWU for biology majors, this course will emphasize the chemical and physical principles underlying biological processes and thereby focus on how cells deal with information and energy in order to survive. You will become familiar with the following topics:

- The structure and function of biological molecules
- The cellular basis of life and its hierarchical organization
- Storage, transfer, and expression of genetic information
- Genome and proteome organization
- Energy acquisition and cellular metabolism
- Evolutionary history of life

Tentative Class Schedule:

<u>WEEK OF</u>	<u># Lectures</u>	<u>LECTURE & READING ASSIGNMENT</u>	<u>LABS</u>
Sept 21 (W)	3	Introduction; Review of Chemical Principles; Water as THE Biological Solvent Ch. 1, 3 (Review Ch. 2, 4)	No lab, P/U lab manual
Sept 26	4	Chemical Architecture in Biological Systems; Tour de cell Ch. 5, 6	Protein Structure
Oct 03	4	Construction of "Bags of Biochemistry"; Fueling the Cellular Fire Ch. 7, 8	Enzyme Activity I
Oct 10	3	Cellular Reproduction & Cell Cycle; Ch. 12	Enzyme Activity II
Oct 14 (F)		Midterm Exam I: Ch. 1-8, & 12	
Oct 17	4	Reduction & Division; Genes and Their Heritable Traits Ch. 13	Diffusion and Osmosis
Oct 24	4	Cracking the Genetic Code & The Double Helix; The Central Dogma Ch. 16, 17	Bacterial Genetics I
Oct 31	4	Genetics of Viruses and Prokaryotes Ch. 18	Bacterial Genetics II
Nov 7	2	The Eukaryotic Genome and Its Expression Ch. 19	DNA Sequence Analysis
Nov 10 (R)		Midterm Exam II: Ch. 13, & 16-19	

	Nov 11 (F)	Veterans Day Holiday – No class	
Nov 14	4	Cellular respiration: Cellular Pathways that Harvest Energy; Photosynthesis: Transforming Sunlight into into Cellular Energy and Organic Carbon Ch. 9, 10	Photosynthesis
Nov 21	1	Photosynthesis (cont.)	No labs this week
	Nov 23-25 (W-F)	Thanksgiving Holiday – No classes	
Nov 28	4	Origins of Life; It's a Prokaryotic World, After All Ch. 26, 27	Final Lab Exam
	Dec 09 (F)	FINAL COMPREHENSIVE EXAM: 8:00am – 10:00am	

Course Description:

BIO 205 demonstrates the interdependence of many scientific disciplines, notably chemistry and physics. The physical and chemical mechanisms which make life possible will be emphasized in both the lecture and the laboratory meetings, and related to our understanding of the origin and evolution of life on earth. We will investigate the levels of organization in living things: beginning with important molecules and how they interact in biological systems, including prokaryotic cellular organization, and progressing to eukaryotic specializations for particular lifestyles (e.g., photosynthesis). The diversity of life which has successfully colonized a variety of habitats on earth will be addressed through topics which demonstrate unity in biological processes: the storage, inheritance and expression of genetic information, organized energy transformations, and the metabolic machinery necessary for the maintenance of structure and function in an array of cells.

Course Evaluation and Grading:

Lecture exams will contain a mixture of multiple choice, short answer, and essay questions, designed to evaluate your knowledge, understanding, and application of course material. You will be expected to be able to integrate concepts, especially towards that latter parts of the course.

The use of scientific modeling is an important part of several laboratory investigations. Laboratory exercises are designed as a means of demonstrating cellular processes and providing opportunities to gain experience in laboratory technique and scientific method. Lab reports are required following most of the exercises, and focus on the construction of graphs and tables for effective communication and analysis of the results. The lab grade contributes ~25% of your total grade. Undergraduate and graduate student teaching assistants will be available in the lab. They are resources important to your success in this course: please respect the work they do for you, and don't hesitate to ask them for assistance with lecture and lab material. This class proceeds at an accelerated pace and your success depends upon the discipline you muster in keeping up with the large amount of material that we are required to cover.

Midterm Exam I	100 points	Tentative Grading Scale: 100 to ≥92% = A <92 to ≥90% = A- <90 to ≥88% = B+ <88 to ≥82% = B <82 to ≥80% = B- <80 to ≥78% = C+ <78 to ≥72% = C <72 to ≥70% = C- <70 to ≥68% = D+ <68 to ≥62% = D <62 to ≥60% = D- Below 60% = F
Midterm Exam II	100 points	
Final Comprehensive Exam	200 points	
<u>Laboratory</u>	<u>150 points</u>	
Total points possible:	550 points	

Notes:

- (1) I grade with an accuracy to the nearest the 0.5%. I reserve the right to round up and will not round down. You may improve your grade by writing a 2-page summary (double spaced) based on one of the supplementary readings provided for each of the two series we will cover. Deadlines for summaries will be posted on the web page and they are final.
- (2) You are currently enrolled in this course and only you can change this. If you fail to complete all of the assignments, or stop coming to class and do not officially withdraw, you will receive a failing grade. This policy is in place due to the high demand for this class and to facilitate responsible and timely decisions regarding enrollment.
- (3) It is the student's responsibility to turn in assignments and take exams at the scheduled times. In the event this is completely impossible, contact me ahead of time. Documentation of family emergency or illness from a health professional confirming that you were unable to take the exam during the scheduled time will be expected before special arrangements will be made. Make-up exams will not be in the same format as typical exams.