

BIOLOGY 201

Fall 1999

Instructor: Craig L. Moyer
Email: cmoyer@hydro.biol.wvu.edu
Web page: <http://fire.biol.wvu.edu/cmoyer/cmoyer.courses.html>
Office Hours: T, 3-4pm; W, 3-4pm; F, 4-5pm; and by Appt., BI 409
Lecture: MTWF, 1pm, BI 212
Labs: R, 1-4pm & 5-8pm, BI 261
Graduate TAs: David Waltz and Richard Llewellyn

Required Texts:

1. Purves et al., *Life, the science of biology*, 5th Edition
2. Biology 201 Laboratory Manual (available from web page)

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
- ▶ Biological energetics
- ▶ Energy acquisition and cellular metabolism
- ▶ Evolutionary history of life

Tentative Class Schedule: (* indicates Monday 10min quiz)

<u>WEEK OF</u>	<u>LECTURE ASSIGNMENT</u>	<u>LAB</u>
Sept. 22 (W)	Introduction; Review of chemical principles; Water as the biological solvent Ch. 1, 2	No lab
Sept. 27	Chemical architecture in biological systems; A division of labor for a complex job Ch. 3, 4	Molecular Models
Oct. 4 *	Precision and unpredictability; Cell Reproduction Ch. 4, 5, 9	Enzymes
Oct. 11	Genes and their inheritance traits Ch. 10, 11	Microscopy
Oct. 15	Exam I: Ch. 2-5, 9-10	
Oct. 18	Cracking the genetic code; Protein synthesis; Genetics of viruses and prokaryotes Ch. 12, 13	Bacterial Genetics I
Oct. 25 *	Genes at work (for fun and profit) Ch. 13 cont, 14	Bacterial Genetics II
Nov. 1	Living things are (at least!) chemical and physical machines Ch. 16, 5 (remainder)	DNA electrophoresis
Nov. 5	Exam II: Ch. 11-14, & 16	
Nov. 8	Cellular respiration: "in goes the good air..." Ch. 6, 7	Diffusion and Osmosis

Nov. 15	Photosynthesis: Transforming light energy into into chemical energy Ch. 8	Photosynthesis
Nov. 22 *	Origins of Life, evidence and controversy Ch. 24	No lab
Nov. 24, 25, 26	Thanksgiving Holiday – No classes	
Nov. 29	Single-celled life forms (prokaryotes and protists) A success story! Ch. 25, 26	Final Lab Exam
Dec. 7 (T)	FINAL COMPREHENSIVE EXAM: 1:00pm – 3:00pm	

Course Description:

BIO 201 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 a 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. Lecture quizzes will be given on the Monday of each week labeled with an asterisk in the syllabus. They will last approximately 10 minutes, and consist of short answer questions dealing with the previous week's lecture material and current reading assignments in preparation for new lecture material.

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 ≥93% = A <93 to ≥90% = A- <90 to ≥87% = B+ <87 to ≥83% = B <83 to ≥80% = B- <80 to ≥77% = C+ <77 to ≥73% = C <73 to ≥70% = C- <70 to ≥67% = D+ <67 to ≥63% = D <63 to ≥60% = D- Below 60% = F
Midterm Exam II	100 points	
Final Comprehensive Exam	150 points	
Three lecture Quizzes (25 pts each)	75 points	
Laboratory	150 points	
Total points possible:	575 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 2-5 page summary (double spaced) based on one of the supplementary readings provided for each of the three series we will cover. No points will be given for summaries, however, more weight will be gained by conducting library research and finding 2 or 3 additional and related articles to address. Make sure to synthesize these articles into your summary and provide the proper references. Deadlines for summaries will be posted on the web page and they are final. A maximum of two summaries will be allowed for the class.

(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 and quizzes 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 may not be in the same format as typical exams. Late assignments, if accepted, are usually penalized 10% for each day late.