

**BIOL 101 General Biology**  
**Montgomery College**  
**Takoma Park/ Silver Spring Campus**

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## **Instructor Contact Information**

## **Schedule**

## **Texts and Materials**

*Concepts of Biology*. 2013. Openstax. ISBN 9781938168116.

This book is FREE online at [www.openstax.org/details/concepts-biology](http://www.openstax.org/details/concepts-biology). You can see it as in webview (recommended) or as a pdf. You can also choose to buy an ibook or purchase a paper version through the bookstore for a low cost.

*BI 101 General Biology Laboratory Manual*, 3rd edition. Edited by Cyrus MacFoy and Nelson Bennett. ISBN: 978-1-4652-0819-4.

You will need goggles for the laboratory.

## **Course Description**

Designed to satisfy the General Education science requirement, this course introduces the basic principles governing living organisms with emphasis on the molecular and cellular basis of life. Concepts in genetics, reproduction, development, evolution, and ecology are discussed. Not recommended for students with credit in BIOL 150 or BIOL 151.

BIOL 101 fulfills a General Education Natural Sciences with Laboratory requirement. This course provides multiple opportunities to develop written and oral communication, critical analysis and reasoning, scientific and quantitative reasoning, and information literacy.

## **Prerequisite**

A grade of C or better in MATH 080, appropriate score on the mathematics placement test, or consent of department. Eligibility for ENGL 101 or ENGL 101A. Completion of AELP 930 or appropriate assessment test score.

## **Objectives**

1. Analyze, interpret, and use scientific data to evaluate claims.
2. Apply the scientific method to answer biological questions.
3. Demonstrate knowledge of fundamental concepts related to the following biological topics: cell structure and function, DNA and inheritance, evolution and biodiversity, ecology and the environment.
4. Distinguish science from non-science.
5. Relate biological concepts to personal and societal issues that affect daily life.

## Outcome Criteria

1. Define the characteristics of life (*Chapter 1*)
2. Identify the steps of the scientific method (*Chapter 1*)
3. Demonstrate knowledge of the diversity and characteristics of the kingdoms of life (*Chapters 12, 13, 14, 15*)
4. Demonstrate knowledge of the basic chemistry of life including elements and atoms, molecules and compounds inorganic molecules carbohydrates lipids, proteins and nucleic acids (*Chapter 2*)
5. Demonstrate knowledge of basic cell function and structure including eukaryotic and prokaryotic cells, the nucleus, membranous canals and vacuoles, energy-related organelles, cytoskeleton, centrioles and related organelles (*Chapter 3*)
6. Demonstrate knowledge of the plasma membrane including its structure and function, how molecules cross the membrane, the processes of diffusion and osmosis, transport by proteins and endo- and exocytosis (*Chapter 3*)
7. Demonstrate knowledge of the methods cells employ to capture and use energy in the processes of photosynthesis and cell respiration (*Chapters 4 and 5*)
8. Demonstrate knowledge of reproduction including maintaining [mitosis] and reducing [meiosis] the chromosome number as well as oogenesis and spermatogenesis (*Chapters 6 and 7*)
9. Demonstrate knowledge of the patterns of gene inheritance including Mendel's Law of inheritance, mutation, and allelic control and dominance, protein synthesis, and genetic regulation (*Chapters 8 and 9*)
10. Demonstrate a general knowledge of biotechnology including the Human Genome Project, cloning, and issues surrounding stem cell research (*Chapter 9*)
11. Demonstrate knowledge of Darwinian evolution and speciation (*Chapter 12*)
12. Demonstrate knowledge of ecology, including ecosystem dynamics, the biosphere and biodiversity, and current issues faced by our societies in global sustainability such as global warming, natural resource depletion, human population growth and escalating energy needs (*Chapters 19 and 20*)
13. Recognize the issues of science and social responsibility (*Chapter 1 and 20*).

## Policies and Expectations

### Attendance

Attend both lab and lecture regularly and on time. If you miss lecture, it is your responsibility to find out what you have missed from your classmates. You CANNOT make up labs. If you miss a lab, read the lab manual or handout, obtain the data from your partner, and complete the analysis and question sections of the report on your own. You are allowed only two absences in lab, for ANY reason (no matter how good the reason). If you miss a third lab I may drop you from the course with a grade of F.

### Academic Integrity

I expect all students to have the highest standards of academic integrity as outlined in MC's *Student Code of Conduct*. Students must do their own work on homework, tests, quizzes, and laboratory reports. If academic dishonesty occurs, you will receive a zero for that assignment and you may be dropped from the course with a grade of F. Academic

dishonesty includes (but isn't limited to) using notes during an exam (except when explicitly allowed by the instructor), copying answers from another student, allowing other students to copy your answers, using a source's words verbatim without putting them in quotes, and failing to give credit to outside sources of information on assignments. *If there are more than 5 words in a row on any assignment or test that come directly from any source. they must be in quotes or that will be considered plagiarism. even if you cite it.* Cell phones must be turned off during exams or I will assume you are cheating. If you are not certain if something is allowed, it is your responsibility to ask me about it before you do it.

### **Make-up exams, labs and quizzes**

Instructors may have different policies for make-up exams, labs, and quizzes. However, each instructor will list their policies here and follow them for all students.

**Cell phones:** Please turn phones off during class.

**E-mail:** Please check MC e-mail regularly.

### **Late Assignments**

I take 10% off for *each calendar day* that an assignment is late. If you want to turn something in and I'm not in my office, please slide it beneath my office door with the date you turned it in clearly marked.

### **Important Student Information Link**

In addition to course requirements and objectives that are in this syllabus, Montgomery College has information on its web site (see link below) to assist you in having a successful experience. It is important that you read and understand this information. The **link below provides** information and other resources to areas that pertain to the following: student behavior (student code of conduct), student e-mail, the tobacco free policy, withdraw and refund dates, disability support services, veteran services, how to access information on delayed openings and closings, how to register for the Montgomery College alert System, and finally, how closings and delays can impact your classes. If you have any questions please bring them to your professor. If any student would like a written copy of these policies and procedures, the professor would be happy to provide them. By registering for this class and staying in this class, you are indicating that you acknowledge and accept these policies.

**<http://cms.montgomerycollege.edu/mcsyllabus/>**

## Grading

You will earn a single letter grade for the combined lecture and laboratory portions of the course. To pass, you must complete all assignments. The grading scheme will be *approximately* as follows, but will vary for each instructor:

<u>Assignment</u>	<u>Points</u>
Lecture Exams (100 points each)	500
Final (make-up) Exam	100
Lab Quizzes (60 points each)	180
Warm up Questions	20
Lab Exercises	54
Lab Reports	40
Scientific Method	
Natural Dyes	
Cellular Respiration	
Oral presentation	50
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Total	844

## Extra credit

Please don't count on extra credit to improve your grade. There may be one or two in-class opportunities to earn a few points, especially on warm-up questions, but these few points will not make a great difference to anyone's grade. Please do not ask me for individual extra credit, because I won't give you any.

Tentative Schedule

Date	Lecture Topic	Lab Topic	Readings / Due Dates
<b>Science and Evolution</b>			
	Introduction	Intro to lab and to studying_ for 101	Ch 1
	Scientific Method	Mathbench graphs OR measurement	Ch 1
	Evolution	Scientific method	Ch 11 (skip section on population genetics)
	Diversity of life	Natural Selection	Ch12
	Microbes, Fungi and Protists	Microscopes	Ch13
	<b>Exam 1</b>	Bacteria etc.	
<b>Plants, Animals, Atoms, and Molecules</b>			
	Plants	<b>Lab Quiz#1,</b> Peer review scientific method lab	Ch14
	Animals	Plants - dissect flowers and inside/outside, for remainder of lab	Ch 15, <b>scientific method lab report due</b>
	Atoms and molecules	Natural dyes research	Ch2
	Molecules, continued	Animals mini bioblitz OR traditional lab	Ch2
	Molecules and catch up	Biomolecules	Ch 2, <b>Natural dyes lab report due</b>
	<b>Exam2</b>	Enzymes	
<b>Cells, Membranes, and Energy</b>			
	Cells	Cells	Ch 3
	Cell membranes	diffusion and osmosis	Ch 3
	Energy	Photosynthesis <b>Lab quiz #2</b>	Ch4
	Energy, cont.	Cellular respiration	Ch4&5
	<b>Exam 3</b>	Mitosis	

<b>Genetics</b>			
	Chromosomes and cell division	Mice with Fangs- Mathbench Punnett squares	Ch6
	Meiosis	inheritance/ Introduce oral presentation	Ch7
	Mendel	Human inheritance	Ch8
	Mendel, continued	DNA extraction	Ch8
	DNA and translation	<del>DNA</del> finger printing	Ch 9
	DNA, continued	oral presentation work day/ conferences	1 Ch9
<b>Exam4</b>		Mathbench Climate Graphs	
<b>Ecology</b>			
	Populations Communities	<b>Lab quiz #3</b> , Climate change case studies Oral presentation	Ch 19 Ch19
	Ecosystems and Communities	Mini bioblitz or communities outside	
	<b>Exams</b>	Review	Ch 20
	<b>Final Exam</b>		