MONTGOMERY COLLEGE - TAKOMA PARK/SILVER SPRING CAMPUS

SYLLABUS for PRINCIPLES OF BIOLOGY II
BIOLOGY 151

Semester:
Course:

Faculty Name:
Office:
Mailbox:
Cell Phone:
Office hours:

Email:

SLC location

"Our nation is weakened when large numbers of citizens are…scientific illiterates"
---Martin Gardner

COURSE DESCRIPTION

This course is designed for Life Science Majors and examines evolution, biodiversity, and ecology. In addition, this course will explore global aspects of the above topics. We will build on cell biology basics learned in BIOL 150 and apply it to the whole organism. This course will explore the evolution and diversity of microbial, animal and plant taxa found in various geographical locations, and will compare biomes worldwide. The environmental impact of humans will be addressed along with international efforts to reduce those impacts. The course consists of three hours of lecture per week and three hours of laboratory. As this course progresses, you will gain technical and 'soft' skills such as critical thinking, the ability to work with others, analyzing what you learn, and communicating your ideas to others. What you learn in this course is more than a stepping stone to your degree: biology relates to all aspects of life and is central to good citizenship when it comes to our food, pharmaceuticals, and environment. Please share what you learn with your friends and family. This is a 'Z' course that uses an on-line textbook and laboratory procedures.

After completing this course, students will be able to:

- Describe the theory of evolution, including principles of microevolution and macroevolution.
- Explain how phylogenetics aids in understanding evolution and biodiversity, and describe how scientists create and interpret phylogenetic diagrams.
- Differentiate between organisms representing the different lineages of life and between major groups within those lineages.
- Describe the diverse adaptations and ecological roles of organisms within each group.
- Explain the basic principles of ecology; including population, community, and ecosystem ecology.
- Explain how human activities alter existing biodiversity and impact evolutionary and ecological processes.
- Analyze and interpret experimental results to reinforce biological principles.

Required Texts and Supplies: Get a ring binder or pocket notebooks, one for lecture, one for lab.
Lecture Text: https://openstax.org/details/books/biology and Student Resources at https://openstax.org/details/books/biology?Student%20resources
Lab manual: 1) Laboratory Procedures will be Posted on Blackboard for you to print out or use on a laptop.
2) Rust, a Guide to Biology Lab, 3rd ed., 1983, REQUIRED, 'used' is fine.
Goggles are REQUIRED; recommended: lab coat, smock or apron to protect clothing, esp. for dissections.
Simple Calculators are REQUIRED, graphing calculators cannot be used for exams or quizzes

SUPPLEMENTAL SOFTWARE/WEB:

This is the first semester we will be using the free, on-line textbook BIOLOGY on OpenStax. Please pay attention to which chapters we will be covering in this course. (Do NOT buy the orange hardcopy text in the

bookstore, that is for BIOL 101). Additional course materials for lecture and lab will be made available online using **Blackboard (Bb).** To access the course website you must log in to MyMC, and then simply follow the Bb link on upper right corner. Online materials include syllabus, assignment sheets, study guides, all laboratory exercises, informational web links, lecture handouts for study, and extra credit materials.

CLASS ATTENDANCE

You are expected to attend and show up on time to all class and laboratory sessions. Missing more than one class period may result in your becoming behind. Further, some material covered on the examinations comes from class lectures- so it is to your benefit to attend all classes. It is your responsibility to get the lecture notes from a classmate if you are late or absent from lecture. If you choose to withdraw, it is your responsibility to complete all necessary paperwork to remove your name from the class roster. Failure to do so could result in a grade of "F" for the semester. Consult your catalog for the add/drop day.

EXAMS

ONE missed examination may be made up upon **showing a written and valid excuse within one week** following the examination. However, NO student will be permitted to make up more than ONE test . Makeups for Final Exams are rarely given. If you have a conflict with the exam time you must contact your instructor as early as possible (at least one week before the exam). It is at your instructors discretion as to whether or not you may take the exam at another time and when that time will be (usually earlier if allowed**). In the case of an emergency for any exam, call me or TEXT me 301-602-4109 and leave a message at the earliest possible time**. A note from a doctor may be checked for authenticity.

Extra Credit: Extra credit may be earned by studying podcasts available in the Science Learning Center, room SN-101, and **submitting your study form to me**. Please note the podcasts you study must be in the Unit we are studying. Extra credit forms submitted after a Unit has been completed will not get credit.

COURSE EVALUATION AND GRADING SCALE: Track your own points on Page 4

Each chapter or particular section is listed in the lecture and lab outline at the end of this syllabus and on Bb. Additional reading assignments may be given during the class time. We will visit the National Museum of Natural History and the US Botanical Garden. Please notify the instructor if you cannot attend field trips.

The grading system for this course will be based upon a point system where each student has an opportunity to earn a total of ~ 900 to 1000 points. If you have any questions about how your final course grade is determined, please contact me as soon as possible. Points will be distributed as follows:

POINT BREAKDOWN	
Lecture:	~ 600-650 points
5 Unit Exams, 450-500 pts	
HW, Quizzes, etc., ~100-150 pts	
Laboratory:	~ 350-400 points
15 Lab Exercises @ 10 = 150 pts.	
5 Lab Quizzes 200 pts	
Laboratory Written and Oral reports ! 100 pts.	

Total (Tentative)	~ 900-1000 points

STANDARDS:

Grade will be assigned as follows:

A = 90%+ of total points
B = 80-90%
C = 70-80%
D = 60-70%

CLASSROOM POLICIES

Lecture Behavior: **Please silence all phones. Calls and e-messages cannot be made during class or lab.** Every student is expected to behave in ways that promote a teaching and learning atmosphere. Students are also expected to conduct themselves in ways that create a safe learning and teaching environment that is free from such things as violence, intimidation, and any type of harassment, including sexual harassment. I repeat, **pagers and cell phones must be silenced when in the classroom.**

Laboratory Behavior: **No cell phone usage is allowed** unless directed by me, e.g. to photograph your lab work . Your lab time is very limited so come prepared, don't waste time figuring out what is going on. All lab instructions are on Bb under 'Course Content'—you are responsible for printing out your own lab procedures. This takes the place of a traditional lab book, but you must purchase RUST. You will need to read the lab exercise **before** coming to the laboratory and review the lab procedures on Blackboard and diagrams in Rust. You are expected to clean up after yourself following lab activities. This means that you must, for example, rinse out laboratory glassware, neatly return equipment to the supply benches, return prepared slides to their specific slide trays, and wash and dry dissecting tools and then return them to their assigned bins.

NOTE: Tips for Success: Dear Students! I know how to lecture, do you know how to learn? I wish I could but I can't learn for you! You must do more than sit in class while I talk….

- Expect to spend 10 hours per week to study or do coursework for any STEM class you take. Read ahead, so that concepts and vocabulary are familiar, and you can fine-tune your understanding of the material during lecture instead of racing to take notes.
- Read laboratory instructions ahead of time-print or use your laptop, there may be pop-quizzes.
- Print lecture slides or notes ahead of time so you don't need to scramble taking notes.
- Form a study group-quiz each other! We will review learning strategies to encourage good study habits
- Focus on the chapter learning objectives and key concepts in the beginning of each chapter.
- Do the in-chapter questions and quiz questions at the end of each chapter. Answers are in the appendix.
- Speak up in class when you don't understand something, and see me at office hours if needed.

TO PREPARE FOR THE EXAMS, FOLLOW THESE 5 STEPS:

1. Keep up with the pace of lecture and lab. Read ahead so you are familiar with lecture and lab topics. **Study with your friends in the Science Learning Center (SLC) in SN-101-do extra-credit videos**
2. Make and use flash cards, especially for memorizing plant and animal groups. Use quizlet.com or cram.com or crashcoursebiology.com to make your own flash cards and practice quizzes
3. Try to understand concepts, not just memorize facts. Bozeman Science or Khan Academy can help.
4. Form study groups early. Meet other students in your lecture or lab section, exchange phone numbers and start studying together soon. Start tonight!!! Remember to quiz each other.

EMAIL POLICY:

Student e-mail (montgomerycollege.edu) is an official means of communication for the College. It is expected **that you check your student e-mail daily and frequently**, as you are responsible for information and announcements that I will send you from Bb and from the College. Most information will be discussed in class or posted on Bb and all assignments will be turned in as hard copy during regular class times or submitted by email, as specified in the assignment sheet. If you contact me through e-mail, use your student e-mail account rather than a publicly available account so that I can recognize you as a student**. Please do NOT use the Blackboard 'email' site. Use MyMC email only.**

COLLEGE POLICIES AND STUDENT CODE OF CONDUCT

Your work must be your own. Assignments that are copied among friends will get a ZERO, including the student who actually did the work. Group study is permitted and encouraged, but your work must be your own. Exams and homework that have been copied from one another will result in 0 % credit for those students involved. According to

the Policies and Procedures of the College, **"cheating" or "plagiarism"** in connection with an academic program is prohibited and students may be disciplined with a 'zero' for the assignment or an 'F' for the course. Cheating, plagiarism, and all any other form of academic dishonesty are taken very seriously. **In all cases, except where teams are set up for specific exercises, your work is to be done independently.** Some examples of cheating as it might occur in homework, reports, or exams are as follows:

a. Copying the work of another student during an exam, homework, lab report or any other coursework

b. **Permitting another student to copy one's work during an examination or any other assignment—you may want to help your classmate, but you, too, will earn a 'zero'.**

c. Using unauthorized notes, crib sheets, additional sources of information, or other material during an examination. **No electronic devices such as a cell phone are allowed during an examination**.

d. Writing the answer to an exam question outside of class and submitting that answer as part of an in-class exam

e. Taking an examination for another student; Having an examination taken by a second party for you;

f. Altering or falsifying examination results after they have been evaluated by the instructor and returned to the student.

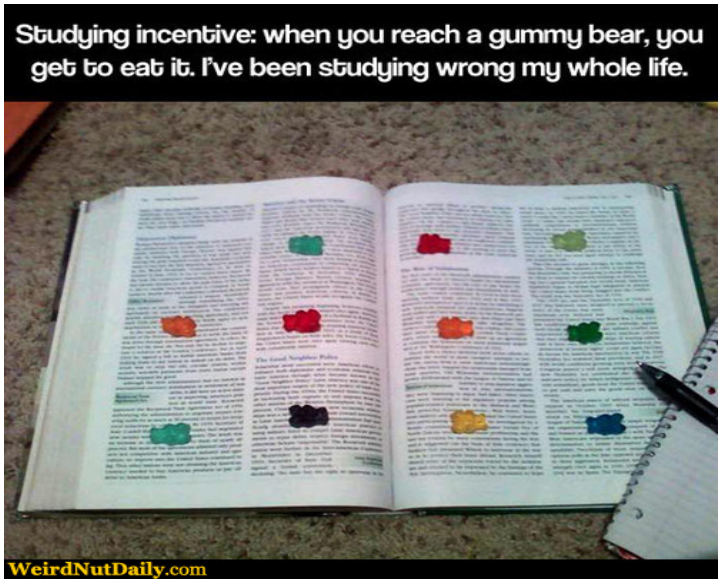
g. **Copying or photographing exam questions is strictly prohibited**. Exams are the property of the Biology Department and students are not allowed to keep them.

VII. General Academic Policies. http://cms.montgomerycollege.edu/mcsyllabus/

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 above) to assist you in having a successful experience both inside and outside of the classroom. It is important that you read and understand this information. The link above 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. As rules and regulations change they will be updated and you will be able to access them through the link. By registering for this class and staying in this class, you are indicating that you acknowledge and accept these policies.

READ YOUR OpenStax free TEXTBOOK!



TRACK YOUR OWN POINTS! THIS IS YOUR PERSONAL GRADE RECORD SHEET:
BI 151–Principles of Biology II

LECTURE	Est. POSSIBLE POINTS*	YOUR POINTS
Exam #1	**90**	
Exam #2	**90**	
Exam #3	**90**	
Exam #4	**90**	
Final Exam # 5	**110-125**	
Homework and Quizzes	**75-100**	
Subtotal	**~600-650**	

LAB	Est. POSSIBLE POINTS*	YOUR POINTS
Lab Quiz 1	**40**	
Lab Quiz #2	**40**	
Lab Quiz #3	**40**	
Lab Quiz #4 Winogradsky paper Stomata Research Paper Homework and Lab work	**40** **50** **35-50** **100-125**	
subtotal	**~350-375**	

Grand Totals:	

*The number of possible points is tentative and may change.

		Biol 151 Schedule	OpenStax	Spring 2019
Day	**Week**	**Lectures (2/week)**	**Textbook**	**LABS are on Thurs--Instructions on Bb**
T	21-Jan	Evolution and the Origin of Species	18	**1A**. Set up Winogradsky Column; **1B**. Sci Method; Graphing H.O.
R		Evolution and the Origin of Species	18	Lab HW: SciMeth,Graphing HW due Jan29; Plant Competition HO
T	28-Jan	The Evolution of Populations	19	2. Population Genetics; finalize groups for plant expt.
R		Phylogenies and the History of Life	19, 20	Lab HW: Genetics Lab and Team Plant Protocols due Feb 5
T	4-Feb	Review Unit 1, Start Unit 2- viruses	20, 21	3. National Museum of Natural History--Study Geologic Time Scale
R		Lab Day: No lecture hour, Field Trip	**metro/bus**	Lab HW: typed answers to NMNH Walking Guide due Feb 14
T	11-Feb	**Exam Unit #1-Evolutionary Processes**	**18, 19, 20**	4. **Quiz** Labs 1-3; Finalize Protocols; Set up Plant Expt's In Greenhouse
R		Viruses, Protists-**Plant protocols DUE 9:30**	21,23	Lab HW: read Microbial Diversity Lab Handout
T	18-Feb	Protists, Bacteria	23, 22	**5A.** Protist Diversity; **5B**: Streak Winog. cultures, Ecoplates;
R		Bacteria, Review Microbes	22	Lab HW: Microbial Diversity Lab Handout due Feb 26
T	25-Feb	Review Unit 1, Start Unit 2-fungi	24	**6A**. Gram Stain cultures, analyze Ecoplates **6B** Protist Wet Mounts
R		**Exam Unit #2 -Viruses, Bacteria, Protists**	**21,22,23**	Lab HW: **DRAFT** Winogradsky Intro, methods, data outline due Mar 5
T	4-Mar	Fungi, Seedless Plants	24, 25	**7A**. Fungal Diversity **7B** Plant Diversity I **7C**. collect 1 st plant data
R		Seedless and Seed Plants,	25, 26	Lab HW: Finalize all Winogradsky data, plan individual reports
XXXXX		**SPRING BREAK**		**SPRING BREAK**
T	18-Mar	Seed Plants, review Fungi, algae, Plants	26	**8A. Plant Diversity Lab II: US Botanical Garden field trip**
R		No Weds lecture--field trip to USBG	metro/bus	HW: USBG handouts due Mar 26; **Winog. reports due Apr 2**
T	25-Mar	**Exam Unit #3-Plants, Fungi + labs 4, 7,8 quiz**	**24,25,26**	**9A.** Animal Diversity I, Protostomes: **9B:** collect 2nd plant data
R		Intro to Animals: Protostomes	27,28	HW: Hand in DRAFT Plant Expt intro, methods, data table Apr 4
T	1-Apr	Proto/Deuterostomes **Winog. Reports Due**	28,29	**10A**. Animal Diversity, Part II - Proto/Deuterostomes;
R		Deuterostomes	29	HW: Animal I, II handouts due Apr 9, returned Apr 11
T	8-Apr	Primates and skulls	27, 28, 29	**11A.** Animal Diversity, Part III - Deuterostomes; **11B:** optional plant data
R		**Review Animals, begin Unit 5 Ecology**	**27, 28, 29**	DRAFT Plant Expt intro, methods, data table due 16 April
T	15-Apr	**Exam # 4 Animals**	27,28,29	**12. Quiz labs 9-11** ; End Plants--last data measure, harvest, dry plants,
R		Intro to Ecology	44	Lab HW: Watch videos on "Ecology United Nations" List with friends
T	22-Apr	Population Ecology	45	**13A**: Chesapeake Bay Ecology Case Study **13B**: Measure plant dry weights
R		Population Ecology	45	Lab HW: Write up Plant Competition Reports due Apr 30
T	29-Apr	Community Ecology; **Plant Reports Due**	46	14. Ecology Lab--Graphing Data Nuggets
R		Ecosystems, Global Cycles, Climate Change	46	
T	6-May	Unit 5 Ecology Review	44, 45, 46	
	7-May	Final Exam, 12:30 TUES		**Final Written Exam will include Questions on Ecology labs 12,13,14**