BIOLOGY 150 LECTURE SYLLABUS
MONTGOMERY COLLEGE,
TAKOMA PARK/SILVER SPRING CAMPUS

Instructor's Name:
Course Title: Principles of Biology I **Course Number**:
Semester: **Course CRN:**
Semester Hours:

Course Prerequisites: MATH 093/096 or college-level math assessment.
Assessment levels: ENGL 101/101A, READ 120 or higher

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 both inside and outside of the classroom. 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. As rules and regulations change they will be updated and you will be able to access them through the link. 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/

COURSE DESCRIPTION
Principles of Biology I is an introductory course for Biology majors. This course, first in a two-semester sequence intended for natural science majors, covers the molecular and cellular basis of life, major metabolic pathways, molecular biology, genetics, biotechnology, and animal development. Three hours lecture, three hours laboratory each week. This course is transferable to the University of Maryland at College Park and to other institutions.

BIOL 150 fulfills a General Education Program Natural Sciences (NSLD with Lab) requirement. Montgomery College's General Education Program is designed to ensure that students have the skills, knowledge and attitudes to carry them successfully through their work and personal lives. This course provides multiple opportunities to develop two or more of the following competencies: written and oral communication, scientific and quantitative reasoning, critical analysis and reasoning, technological competency, and information literacy.

Natural sciences courses examine living systems and the physical universe. They introduce students to the variety of methods used to collect, interpret, and apply scientific data, and to an understanding of the relationship between scientific theory and application.

Natural Sciences Outcomes: students should be able to

- explain the basic principles and theories of one or more of the natural sciences;
- explain how natural scientists in a particular discipline conduct research;
- explain the fundamentals of experimental design;
- make observations, generate and analyze data using the appropriate quantitative tools, and draw a valid conclusion from the data;
- explain the conclusions of an experiment, consistent with the principles illustrated; and
- communicate the findings of science using appropriate oral and written means.

COURSE LEARNING OUTCOMES

After completing this course, you will be able to:

- Describe the basic principles of chemistry that are important to biology and identify the structure and functions of macromolecules important to living things.
- Define basic characteristics of living organisms and identify basic cell types, cellular structures and organelles, and describe their functions.
- Describe the basic processes of cellular metabolism and energy flow.
- Differentiate the characteristics and roles of mitotic and meiotic cell divisions.
- Identify basic mechanisms of heredity, and understand the cellular and molecular basis of inheritance.
- Identify and understand the processes of animal reproduction and development.
- Use experimental results to describe biological principles.

RESOURCES

Lecture Textbook :

Campbell Biology, 3rd Custom edition for Montgomery College taken from 9th Edition. San Francisco, CA: Pearson Benjamin Cummings. **OR**

Campbell, Neil A., J. B. Reece, L. A. Urry, M. L. Cain, S. A. Wasserman, P. V. Minorsky, & R. B. Jackson (8th edition/9th edition) Publisher: Pearson Benjamin Cumming

Laboratory Manual and Supplies (Required):

Montgomery College, (2009). *A Laboratory Manual for BIOL 150: Principles of Biology I, 8th Edition*.

STUDENTS MUST USE A NEW COPY

- Calculator for simple calculations (graphing calculators are not permitted for exams or quizzes)

-Safety Goggles for laboratory classes (you must have goggles even if you wear prescription glasses)

THE INSTRUCTOR WILL NOT PROVIDE YOU WITH SAFETY GOGGLES.

Supplemental Web Resources

If you purchase a new copy of the textbook, then you will receive access to the Mastering Biology website (www.masteringbio.com). If you purchased a used textbook, then you may purchase access to the website for a small fee.

Your instructor will make some materials available online via **Blackboard**. Online materials may include syllabus, assignment sheets, study guides, informational web links and lecture handouts. Students are encouraged to check Blackboard regularly for course materials and announcements.

COURSE EVALUATION & GRADING

Each chapter or particular section is indicated in the detailed course outline. Additional reading assignments may be given during the class time. It will greatly benefit you if you regularly read the chapter before the lecture. Bringing your text to class as well as lab could be useful as you will find reference to the diagrams in the text of critical importance. The course consists of 3 lecture hours and 3 hours of lab per week.

Requirements / Hints for Success

1. Although I am more than willing to help you, **you are responsible for your own learning**. Ultimately, your success will be determined largely by the choices you make regarding your approach to this course.

2. **Choose to attend class and complete assignments!**
   In order to successfully complete this course, you must attend all lectures and labs, take all lecture and lab exams, assignments and quizzes. Attendance will be monitored, and **absences in lecture or lab will affect your grade** . You are responsible for all material covered in lecture and lab.

3. **Choose to study!**
   In order to be successful in this course, you must read, prepare, and study both **before and after** coming to lecture or lab (at least three hours of study for every lecture).

a. Lecture: A set of ***Study Questions*** will be available for each section of material covered in lecture. It is

best to **preview the chapter before class**. Quizzes and activities will be based on the assigned readings, lecture material and study questions. The textbook CD-ROM may provide useful supplemental materials to assist you in learning the material.

b. Lab: It is important to preview the lab exercises and **complete pre-lab homework as assigned before** coming to lab so that you are prepared and are able to use your lab time efficiently. Lab instructors may frequently check your understanding of the day's material. You should complete all activities and questions in the lab manual. Lab exams will be based on the knowledge you acquire as you obtain results and make observations.

4. **Choose to seek help!**
If you are struggling with this class or having problems understanding some material, seek help ASAP! I am more than happy to assist you—visit my office hours or schedule an appointment! Other sources of help include the biology tutors available in the Science Learning Center (SN 101) or even your own classmates! The review sessions are very helpful.

COURSE GRADING: The grading system for this course will be based upon a point system where each student has an opportunity to earn a total of 1000 points.

Lecture: 4 unit exams	= 350 points
Lab: 2 exams	= 200 points
Final Lec. exam	**= 150 points**
Homework assignments	~ 90 points
Lecture Quizzes	= 60 points
Lab Quizzes	~ 85 points
Pre Lab Assignments and Homework	~ 95 points
Total Possible	**~ 1000 points**

Grading Scale Standards:
A = 90 – 100%, B = 80 - 89%, C= 70-79%, D= 60-69%; F= below 60%

Lecture exams will cover material from the study questions, assigned readings, and lectures. Exams will consist of multiple-choice questions, true/false, matching and short answer or short essay questions.

Quizzes will be announced in class for both lab and lecture. Quizzes will be multiple choice, true/false or short answer questions that can be answered by studying the material presented in class and completing the reading and study questions.

CELL PHONES & EXAMS: Under no circumstances should you answer or use a cell phone during a quiz or exam. Cells phones should be put away and should not be visible. Failure to follow this policy will result in you receiving "0" points on the quiz or exam. *This policy also applies to other electronic devices. For some exams, a simple calculator may be permitted.

Class participation - Each student will have an opportunity to earn points by answering questions/ actively participating in group activities during class throughout the semester. Points will not be deducted for incorrect answers.

REVIEW SESSIONS FOR EXAM – Multiple review sessions will be held every week. I strongly encourage you to attend these sessions. Attendance is worth 2 extra credit points.

Lab: Students will be required to prepare for lab by completing pre-lab homework and studying for regular quizzes. Lab work will also be periodically collected and graded**.**

MAKE-UP POLICY:
1. **Lecture Exams:** An excused absence **REQUIRES** a) that you supply written documentation from a professional regarding your absence (e.g. doctor's note, police report, etc.) and b) that you contact me **before** the scheduled exam (or within 24 hours afterwards in emergency situations). To contact me e-mail me or call my office and leave me a message (see Section I, *Instructor Information*). You must take the make-up exam within **3 days** of the regularly scheduled exam.

2. **Labs:** Labs missed due to an excused absence may be made up by attending another lab section; however, special arrangements must be made. Talk with your lab instructor to arrange a make-up and to receive your attendance points. Missed lab exercises must be made up within a week of their regularly scheduled times.
3. **Other Assignments** (e.g. homework, in-class quizzes & activities, etc.)**:** In general, there are no make-ups for these assignments. If you will be absent / tardy on the day an assignment is due, please submit it **before** the due date & time. In-class quizzes / activities cannot be made-up, although special arrangements may be possible if your absence is excused. See the requirements for an excused absence under the *Make-up Policy* for *Lecture Exams* above.

IF A STUDENT MISSES AN EXAM WITHOUT PRIOR NOTIFICATION (AS IN THE CASE OF SICKNESS), IT IS THE STUDENT'S RESPONSIBILITY TO INFORM THE INSTRUCTOR AND REQUEST A MAKE UP EXAM AFTER THEY RETURN TO CLASS.

Extra credit -. A student may earn up to 20 extra credit points by attending a review session for at least 40 min) or working on a podcast in the Science Learning Center according to instructions. Each podcast is worth 2 points. Please refer to the handout provided by the SLC. For every review session you attend (40 mins minimum) you get 2 pts **. A maximum of 20 extra points can be earned either through review sessions and / or podcasts. No other extra credit requests will be accepted**

ACADEMIC POLICIES
Class Attendance: You are expected to attend and show up on time to all class and laboratory sessions. Because of the accelerated speed of this course, there is little time to catch up on missed work. Missing more than one class period may result in your becoming hopelessly behind. Further, much of the material covered on the examinations comes from class lectures, so it is to your benefit to attend all classes. If you are late to lecture or lab session, please be courteous to your classmates by quietly sitting at the rear of the class if possible. It is your responsibility to get the lecture notes from a classmate if you are late or absent from lecture.

Lecture Behavior: Each and every student is expected to behave in ways that promote a teaching and learning atmosphere. Out of respect for the instructor and for other students in the class, each student is obligated to arrive on time and to conduct themselves in a mature and non-disruptive manner during the instructional period. In the unlikely event that a student's behavior is distracting the class, the instructor may ask that student(s) to leave the class. Please refer to the Student Code of Conduct for more information. **Students are not allowed to make audio or video recordings without permission of the instructor.**
CELL PHONES MUST BE SILENCED DURING CLASSTIME. LAPTOPS MAY BE USED ONLY FOR NOTE TAKING/ANNOTATION, NOT FOR PERSONAL/ SOCIAL USE. THE USE OF CELL PHONES DURING LECTURE AND LAB IS NOT ALLOWED, ANYONE WHO DOES SO, COULD BE MARKED ABSENT FOR THAT LECTURE/LAB PERIOD / ASKED TO LEAVE THE CLASS IF THE PROBLEM PRESISTS OR HAVE POINTS DEDUCTED.

Laboratory Behavior: Your lab time is very limited. **To complete the labs in the allotted time, you will need to read the lab exercise before coming to the laboratory and review the appropriate chapters in the text**. **Lab safety rules should be followed and failure to do so will result in deduction of points. If the student fails to bring safety goggles, he/she will not be allowed to participate in the lab and may be asked to leave.** It is the student's responsibility to be in the lab on time. Instructions for that lab will not be repeated if a student comes late to the lab without prior approval. **A missed lab cannot always be made up so be prepared to go through the lab on your own if you have missed one**

LATE POLICY
Assignments are due at the beginning of class on the due date. Any assignment that is handed in after that time is considered late. **Late assignments will either not be accepted or be penalized 10% of their point value for each day that they are late,** starting with the due date. **This policy holds for all assignments**.
ANY STUDENT WHO COMES IN LATE FOR A QUIZ OR EXAM (LECTURE AND LAB) WILL NOT BE GIVEN EXTRA TIME. MISSED QUIZZES CANNOT BE MADE UP AT THE END OF THE LECTURE OR LAB IF TARDINESS IS THE REASON.

Academic Integrity: Students should refer to the current Montgomery College Student Handbook for the official wording of all academic, classroom, and college-wide policies. Students are expected to abide by the code of Conduct. 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. In the rare instance that a student in this course cheats or plagiarizes material, that student will receive a grade of F for the course.

Cheating and plagiarism are taken very seriously. In all cases, except where teams are set up for specific exercises, your work is to be done individually. Some examples of cheating as it might occur in are as follows:
a. Copying the work of another student during an examination or any other coursework
b. Permitting another student to copy one's work during an examination or any other coursework
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 in-class exam
e. Taking an examination for another student; Having someone else take an exam 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

Withdrawal and Refund dates
If you wish to withdraw from the course, you must do so officially. Please be familiar with the dates and procedures for withdrawal that are found in the schedule of classes. *Simply not showing up for class for the rest of the semester does not constitute an official withdrawal*, and you will receive an "F" in the course. 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.

Audit Policy
All students registered for audit are required to consult with the instructor before or during the first class session in which they are in audit status, and students are required to participate in all course activities unless otherwise agreed upon by the student and instructor at the time of consultation

SUPPORT SERVICES
1) SCIENCE LEARNING CENTER: Limited services, such as tutoring, reference texts, software, and microscope slides may be available at the **Science Learning Center** (SN101; Phone: 240-567-1427). You may also use the Science Learning Center as a place to study. There is a copy of your textbook on reserve that you may use while you study there. Check with the Science Learning Center for tutors and times.
2) For transfer support, see stemtransfer.org and MyMC Homepage under Student Quicklinks.
3) For STEM (Science, Technology, Engineering and Math) Majors, see www.montgomerycollege.edu/gtstep for online advising and tutoring.
DISABILITY SERVICES: Any student who may need an accommodation due to a disability, please make an appointment to see me during my office hour. In order to receive accommodations, a letter from **Disability Support Services**(R-CB122; G-SA175; or TP/SS-ST120) will be needed. Any student who may need assistance in the event of an emergency evacuation must identify to the Disability Support Services Office; guidelines for emergency evacuations are at: www.montgomerycollege.edu/dss/evacprocedures.htm. ***No accommodation will be made without clearance from DSS. IF THE STUDENT WISHES TO TAKE THE EXAM IN THE REGULAR CLASSROOM JUST LIKE THE OTHER STUDENTS, WITHOUT ACCOMMODATIONS, HE/SHE SHOULD SIGN A SHEET STATING THEY ARE DOING IT WILLINGLY.***

DELAYED OPENING/ CANCELLATION/INCLEMENT WEATHER POLICY
The only time the Biology Department cancels classes is when the college closes. The college reports its status to all of the major television and radio stations. Typically, the college only reports that it is closing or is closed, NOT that it is open. Use your own judgment if the weather is inclement and you have not heard a report from the college. **Check MC email and Blackboard announcements for class makeups/announcements/changes in exam, quiz or assignment due dates.**

E-MAIL POLICY

Student e-mail (@montgomerycollege.edu) is an official means of communication for the College. 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. When you send me an email, **PLEASE WRITE YOUR NAME** while concluding your message. The instructor is not expected to reply to an email where the identity is not known. (It takes a few extra seconds to sign your name at the end of the message)

GRADE RECORD SHEET: BIOL 150–Principles of Biology

LECTURE	**POSSIBLE POINTS***	**YOUR POINTS**
Exam #1	70 points	
Exam #2	80 points	
Exam #3	100 points	
Exam #4	100 points	
Final Exam	150 points	
Homework, Class participation	~120 points	
Quizzes	~60 points	
Subtotal	**~680 points**	

LAB	**POSSIBLE POINTS***	**YOUR POINTS**
Lab Exam #1	100 points	
Lab Exam #2	125 points	
Homework/Pre-lab assignments	*95* points	
Lab Quizzes	85 points	
subtotal	**~ 400 points**	

Total # of possible points*	**~1080**
Your total number of points	

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

BIOL 150 TENTATIVE LECTURE OUTLINE Spring 2018*

Week #	Date	Topic	Chapter Reading
1	1/23	Introduction: - Scientific method & Evolution	1
	1/24	Chemistry of Life	2
2	1/30	Chemistry; Water: Importance for life	2, 3
	2/1	Carbon: Molecular diversity of life	4
3	**2/6**	**Exam I: Chapters 1 - 4 (Scientific Method, Chemistry, Carbon, Water);** Lecture after exam on Chap 5	5
	2/8	Macromolecules – Carbohydrates, Lipids & Proteins	5
4	2/13	Macromolecules – Proteins, Nucleic Acids	5
	2/15	Cellular structure/function	6
5	2/20	Membrane Structure and Function	7
	2/22	Introduction to metabolism	8
6	**2/27**	**Exam II:(Chap 5 - 7) Biomolecules, Cell Structure and Membrane**	
	3/1	Food to energy: Cellular respiration	9
7	3/6	Food to energy: Cell respiration	9
	3/8	Energy to food: Photosynthesis	10
	3/12-3/18	**SPRING BREAK**	
8	3/20	Cell cycle, mitosis and cancer	12
		Lab Exam # 1 & Microscope Lab	
	3/22	**Exam III: Chapters 8 - 10 (Metabolism, Cell Resp, Photosyn)**;	
9	3/27	Meiosis; **Animal Development**	13, 47.1
	3/29	Genetics I: Mendel's Laws	14
10	4/3	Genetics II: Extension's of Mendel's Laws	14
	4/5	Genetics III: Beyond Mendel	15
11	4/10	Genetics IV: Beyond Mendel	15
	4/12	Gene Expression I : DNA structure	16
12	**4/17**	**Exam IV: Chapters 12 - 15 (mitosis, meiosis & genetics)**	
	4/19	Gene Expression II: DNA replication	16
13	4/24	Gene Expression III: RNA transcription	17
	4/26	Gene Expression IV: Translation	17
14	5/1	Gene Expression IV: Translation/Biotechnology	17, 20
		Lab Exam # 2 (Ex. 7, 9, 10 and GMO labs)	
	5/3	Biotechnology, Final exam review	20
Final	**5/10**	**Final exam: Chapters 16, 17, 20, 47(Gene expression, Biotechnology, Animal development)- 8 to 10 am in SS 227**	

Dates and topics for lecture quiz will be announced in class

BIOL 150 LABORATORY SCHEDULE (SS 220)

Week	Date	Topic	Homework Due
1	1/23	**Exercise 1A: Scientific Method Lab &** Handout for Activities 2-6**; Introduction to the lab and lab safety:** Lab Safety Handout	Read Lab 1A pg 1-9
2	1/30	 **Exercise 1B & C: Data Analysis-Measurement & Graphing** *See pg. 345-347 for micropipettor & spec instructions*	**QUIZ** Due: Pre-lab on pg. 11 -13 & 29-37 for lab 1B&C; Completed actvities 2- 6 for grade
3	2/6	 **Exercie 3A: Diffusion**	**QUIZ** Due: Pre-Lab on pg. 75-78 and graph on pg. 38-39
4	2/13	 **Exercise 3 C: Osmosis**	**QUIZ** Due: Pre-Lab on pg. 115-124; Completed Diffusion lab for grade
5	2/20	 **Exercise 4 B**: **Enzymes** *See pg. 350 for spec. instructions*	Due: Read pg. 151-154 and do **Pre-Lab on 351-352**; Completed Osmosis lab for grade
6	2/27	 **Exercise 4 B: Enzymes**	**QUIZ** ***Due at least 2 days before this lab***: Turn in finished group design of lab experiment
7	3/6	 **Exercise 6: Photosynthesis**	**Due:** Pre-Lab on pg. 353-354; **Complete LAB REPORT for grade**
8	**3/20**	**Lab Exam # 1 (1-1/2 hrs. - 100 pts.)** **Exercise 7**: **Microscope**-pg. 213-219 *See pg. 341 on focusing microscope*	
9	3/27	 **Exercise 7: Microscope** pg. 221-228 **Exercise 8**: **Mitotic Cell Divisio n**	**QUIZ** Due :Pre-Lab on pgs. 357-358
10	4/3	**Exercise 9: Animal development** **Exercise 10: Genetic Inheritance Study Guide**	**QUIZ** Due: Pre-Lab on pgs. 359-360
11	4/10	**Exercise 11: Chi-Square Test and Genetics** **Introduce GMO labs** (40 min - 1 hr.) *GMO Handouts*	**QUIZ** Due: Pre-lab on pg. 271-274
12	4/17	 **GMO 1: DNA extraction & PCR** ***GMO Handout & pgs. 365-367***	Due: Finish Lab 11 for grade; Pre-lab-read handout intro & pgs. 365-367 & complete pgs.361-362
13	4/24	 **GMO 2: Electrophoresis** ***GMO Handout & Lab Review packet***	**QUIZ** (15 pts.) Due: Pre-lab on pgs. 363-364
14	**5/1**	**Lab Exam #2 (125 pts.)**	
15	**5/8**	*No Lab (Finals Week)*	

 **Safety goggles must be worn on these days**