

MICROBIOLOGY (BIOL 275)



Course number & section: BIOL 275

Number of Credits: 3 credits

Prerequisites: BIOL141 or 141H or BIOL 100 or 100H

Semester/Year: Summer I 6 week session-2014

Class Time/Location: Tues/Thurs 9:00AM-12:10PM BS004

Course Instructor: Ms. Susan Schreier

Office: Public Policy #406

Office Hours: Directly after class or by appointment

Office Phone: 410-455-1267

Email: sschreier@umbc.edu

Required course materials:

Textbook: Bauman, Robert W. 2011. *Microbiology, With Diseases By Body System*, third edition, Pearson Benjamin Cummings, San Francisco, CA.

Optional:

Please note: There is the website called "Mastering Microbiology" that accompanies this textbook. We will not be requiring this for our course. However, it is a wonderful online resource – with self-quizzes, tutorials, videos, etc. It may be a helpful addition for you in this class. An access code comes with the bundled 3rd edition (which is \$5 more than the book by itself) and so you would get the book and the online resources. There are additional options that you should know about:

- If you are using a bound version of the 3rd edition, or bought the 2nd edition of the textbook, and would like to purchase an access code, you can buy one at the bookstore. It's up to you.
- If you feel you don't need an actual hardback book, you can go to www.masteringmicrobiology.com and purchase an access code with an ebook. This is an interactive form of our textbook that is all online. The total for this is ~\$78. (the only downside to this is that the ebook expires, so if you want to keep your textbook for the future, I suggest you buy a hard copy)

BLACKBOARD: All relevant information, communication and material for the course will be posted to the class Blackboard site on myUMBC. Blackboard will also be used to make course announcements, to administer quizzes, and to give you resources other than the lecture and textbook. Announcements will be emailed from Blackboard for which you will be responsible. Make sure your UMBC email address is working and that you check it frequently!

LECTURES: Take good notes. The PowerPoint slides we will use in our presentation will merely highlight and outline what is being said, and should not be considered the only information learned. The slides will be made available on Blackboard.

Microbiology Learning Outcomes

This course introduces the basic biology, biochemistry, and genetics of microbes, followed by their roles in disease and host organism's defenses. The ASM Recommended Curriculum Guidelines for Undergraduate Microbiology can be found in the course documents section of our blackboard website.

With the successful completion of this course the student will be able to:

- Outline the historical origins of microbiology including its interrelationship with the theory of biogenesis and germ theory of disease.
- Identify the major groups of microorganisms according to their taxonomic classification and describe their main characteristics including their medical significance.
- Compare and contrast prokaryotic and eukaryotic cells in terms of their structure, replication of DNA, and flow of genetic information within the cell.
- Relate how the biological features of a particular microbe enable it to cause disease.
- Describe general patterns of regulation of gene expression, recombination of genetic information, and exchange of genetic information.
- Identify the physical and chemical factors that influence the growth of microorganisms.
- Explain common physical and chemical methods used to inactivate or limit the growth of microorganisms, including antimicrobial therapies.
- Summarize the modes of transmission of disease including pathogenic mechanisms used by microbes to invade and damage the host.
- Describe the nonspecific and specific immune defenses of the host against microbial infection.
- Demonstrate the relationship between science and society by identifying and discussing topical/ethical issues in microbiology.

What you should already know:

Since BIOL 100 or BIOL 141 is a prerequisite for this course, you are expected to be familiar with the following terms and concepts:

- Atoms, molecules, and elements
- Chemical bonds: Covalent bond, ionic bond, hydrogen bond; pH
- Hydrophobic and hydrophilic interactions, polar and non-polar compounds
- Carbohydrates: Monosaccharides, Disaccharides, and Polysaccharides
- Lipids: Fatty acids, triglycerides, phospholipids, and sterols
- Proteins: Amino acids; primary, secondary, tertiary, and quaternary structure
- Nucleic acids: DNA, RNA (mRNA, tRNA, rRNA)
- Membrane structure: Lipid bilayer, membrane proteins, and fluid mosaic model
- Respiration and Photosynthesis
- Enzymes
- DNA Replication
- Gene Expression and Central Dogma: Transcription, and Translation

Note: *If you have trouble with this information, you should review it on your own; otherwise, it is strongly recommended that you drop the class and return when you have learned these basic concepts.*

Assessment:

Your grade will be determined by your performance on exams, quizzes, assignments, and attendance/participation.

Exams: 80%

Exam 1-20%

Exam 2-20%

Exam 3-20%

Final Exam- 20%

Reading Quizzes: 15%**Participation in Class:** 5%

The final exam is scheduled well in advance and will be IN CLASS. We expect everyone to take the final in class as scheduled! If you become ill or a family emergency arises, let us know before this exam. Call the Biology secretary (410-455-2261). A make-up exam will be given only with a valid written excuse.

COURSE POLICIES**ATTENDANCE**

Attendance is important. Missing class may lower your performance on exams, as you are responsible for all lecture content material regardless of its inclusion in the textbook. You are responsible for any announcements made in class. They may not always appear on the course web site. Often we will start the class with "Microbe Minutes" in which we highlight a particular microorganism. This information will not be on the lecture PowerPoint slides but there will be questions on the exams based on this material.

QUIZZES

You will be expected to take the online reading quizzes on Blackboard on assigned reading material before that particular class where we begin a new chapter. You will not be able to earn credit for reading quizzes once the due date has passed. Your lowest quiz score will be dropped.

How to Contest Grades

If you believe something was graded incorrectly, you have **one week** after you receive the graded document (or see your score on blackboard) to provide a **written** rebuttal explaining why you think you deserve credit for your answer. *Oral arguments will not be entertained due to time constraints.* Written comments **will not be accepted** on the day a graded item is returned to allow you time to collect your thoughts. You will not be penalized via a complete re-grading of the document, but you must submit your original exam or quiz with your rebuttal. ***Rebuttals based on perceived unfairness will be returned to the student with no credit restored.*** All comments will be handled without prejudice.

Penalty for Late Assignments

Any assignments are due online or in class by the due dates specified in the lecture schedule. Late assignments will **NOT** be accepted for grading **UNLESS** you have a documented excuse. NO EXCEPTIONS.

Americans with Disabilities Act:

If you are a qualified student with a disability seeking accommodations under the Americans with Disabilities Act, you are required to self-identify with Disability Student Services in the Administration Building and present a letter to me from DSS. This should be done during the first week of class.

How Can Each and Every One of You Succeed in this Course?

First, get rid of the notion that you will learn all you need to know during class time. For science classes, educators have estimated that for every hour of in-class/or out of class lecture time, you should spend 2-3 hours of time on your own reviewing course content material. That is probably about right because you are responsible for your own learning and understanding. We cannot learn the information and understand the concepts for you and we cannot make you learn and understand simply through lecture. So the question becomes, how can you most profitably spend these hours outside class? The following list summarizes some strategies I have used as a student and that other students have shared with me.

1. **Read the textbook before class.** Read it through once to identify the "big ideas", then for the details that can't always be covered during the allotted class time. Don't highlight every line (this is painting, not studying). Select key concepts and definitions. Keep the textbook closed during lecture.
 2. Go over your **lecture notes** after each class. Use your text to fill in missed details and answer questions that you have. But if a question still persists after you have tried to answer it yourself - ASK YOUR INSTRUCTOR. Stop by my office or send me an email or post your question to the discussion board. Each class builds on information in preceding classes. If a key concept is missed early on, new information will be confusing. Most importantly, organize the material for yourself in terms of importance. It is critical that you know the difference between the large concepts and fine detail of what you are studying, otherwise the semester becomes nothing more than a long boring series of "facts" with no connections.
 3. Review the **chapter objectives** online that are provided by the instructor. Some of these WILL appear on the exams.
 4. **Study Resources:** Textbook study guides, questions, and activities throughout the book and especially at the end of each chapter. Improve your comprehension by using the Learning Objectives, Online Resources, MicroPrep Pre-Tests, Critical Thinking Questions, Chapter Summaries, Highlights, Questions for Review, Beneficial Microbes, Diseases at a Glance, Applying Molecular Techniques, and Clinical Case Studies in the text. Participate in any study sessions held by your instructors.
 5. **Organize a study group.** Ask questions of one another. Try to figure out what questions we might ask on an exam. Analyze each answer as a group and work together to arrive at complete and accurate answers to the questions. Most importantly, take turns TEACHING TO one another. Studies show the best way to learn for most people is to teach the material.
-

STUDENT ACADEMIC INTEGRITY:

Academic Integrity:

While we encourage you to study together and talk to each other about the course and assignments, ultimately anything you submit in this course with the expectation that it will be graded should be your own work. Unless stated otherwise for a particular assignment, there are no “group projects” in this course.

By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, dishonesty, plagiarism, and helping others to commit these acts (facilitating) are all forms of academic dishonesty, and they are wrong. These terms, with examples, are defined in a two-page excerpt from the Undergraduate Student Academic Conduct Policy that we have posted in the Course Documents section of our Blackboard Homepage. You are required to read this document as one of your assignments for this week.

Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. As faculty members of this university, we are committed to fulfill our responsibility to maintain high standards of academic integrity in our course by reporting and penalizing any acts of academic misconduct occurring in this class in accordance with the Undergraduate Student Academic Conduct Policy.

Anyone charged with a violation of the UMBC policy on academic integrity in any aspect of this course that is graded, will, at a minimum, receive a grade of zero for that exam, quiz, or assignment and, at a maximum, may result in a failing grade in this course. Academic misconduct means CHEATING, FABRICATION, FACILITATING ACADEMIC MISCONDUCT, PLAGIARISM, OR DISHONESTY BY A STUDENT.

Students are expected to be aware of UMBC policy on academic integrity. You should read the full Undergraduate Student Academic Conduct Policy.

(and finally) A Word About Student Conduct

"Every student has the **right** to learn, as well as the **responsibility** not to deprive others of their right to learn."

To ensure that we observe this philosophy, I will ask you to respect the following policies:

1. Be on time for lecture. Late arrival is very disruptive and violates our basic philosophy. It is not acceptable to wander in and out of the classroom during the class period.
2. Do not schedule other engagements during class time. Leaving early is equally disruptive. If you have scheduled another engagement, do not attend class.
3. There will be no makeup for any work, quiz or examination you may miss after your departure.
4. If you have trouble hearing or concentrating due to distractions around you, quietly and politely ask those responsible for the distraction to stop.
5. DO NOT use laptops or cellular phones during the lecture. Put cell phones off or on silent during class. Students using cell phones and/or texting during class, may be asked to leave.
6. In addition, no cell phones, pagers or any other electronic device other than an approved calculator is permitted on desks during tests.
7. Classroom behavior determined to be inappropriate and cannot be resolved by the student and the faculty member may be referred for administrative or disciplinary review and the student will be barred from attending class.