BIOL 3444-001: GENERAL MICROBIOLOGY (LECTURE)
Fall 2014

Instructor(s): SYED ABBAS

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Office Hours: WED 9:00 AM - 10:30 AM; FRI 9:00 AM - 10:30 AM

Section Information: BIOL 3444 -001 #85688

Time and Place of Class Meetings: LS 124 M-W-F 11:00 AM - 11:50 AM. PLEASE NOTE THAT MONDAY LECTURES WILL BE DELIVERED ONLINE (ELEARN.UTA.EDU) AND WILL NOT BE HELD IN CLASS.

Description of Course Content: Fundamental principals of microbiology including the structure and function of microbial cells and their activities in nature. Bacteria will be used in the laboratory to provide training and experimental methodology. Formerly listed as BIOL 2451; credit will not be granted for both. Prerequisite: BIOL 1441.

Student Learning Outcomes: This course is designed to assist students in developing a strong understanding of the basic principles of microbiology, the study of microscopic organisms. Upon completion of the course, the student will be able to:

1. Understand the historical development of microbiology.
2. Gain insight into the diversity and evolutionary history of microbes.
3. Reinforce their retention of basic biochemical concepts needed for microbial structure and function analysis.
4. Clarify the morphology, chemical composition and function of the prokaryotic cell.
5. Describe the relationship between the cell's properties as a machine and coding device, by analyzing its nutritional requirements, essential metabolic pathways, and how these two functions culminate in the growth of the organism.
6. Elucidate the role of information in the form of genes and chromosomes, and the expression and simultaneous regulation of genetic information.
7. Analyze patterns of inheritance in prokaryotic cells.
8. Realize the importance of viruses as acellular structures that require living cells for their perpetuation.
9. Evaluate the variety of methods used to control microbial growth and their practical implications for human activities.
10. Comprehend the important function of the human body to defend against potential invasions by microbes.

Requirements: PLEASE PAY ATTENTION TO ANNOUNCEMENTS AND EMAILS ON BLACKBOARD.

Required Textbooks and Other Course Materials: MADIGAN, ET AL. BROCK BIOLOGY OF MICROORGANISMS, 13TH EDITION

Descriptions of major assignments and examinations: THERE WILL BE A TEST OVER EACH CHAPTER. TEST DATES WILL BE ANNOUNCED IN CLASS AND BLACKBOARD AS SEMESTER PROGRESSES. TOTAL NUMBER OF TESTS WILL BE DETERMINED BY THE PACE OF THE COURSE, AND CANNOT BE DETERMINED YET. TEST DATES WILL BE ANNOUNCED REASONABLY IN ADVANCE, AT LEAST ONE OR TWO CLASS PERIODS IN ADVANCE. EACH TEST WILL CONTAIN ABOUT 25-35 MULTIPLE CHOICE QUESTIONS. TIME ALLOWED WILL BE ABOUT 35-45 MINUTES. EXACT TIME ALLOTED WILL BE ANNOUNCED PRIOR TO EACH TEST. FINAL EXAM WILL NOT BE CUMULATIVE. The following grading scale will be used to determine your grade for the course; A - 90 to 100%, B - 80 to <90%, C - 70 to <80%, D - 60 to <70%, F - <60%. You may be required to bring to each exam a NO. 2 lead pencil and a SCANTRON 882-E electronic grading form. You may not have any other personal belongings at your desk during an exam. You will not be allowed to take an exam if you do not comply. You are expected to keep track of your performance throughout the semester and seek guidance from available sources (including the instructor) if your performance drops below satisfactory levels

Drop Policy: You may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, you must see an academic advisor to drop a class or withdraw. If you have not declared a major, you must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is your responsibility to officially withdraw if you do not plan to attend after registering. **You will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/ses/fao).

Attendance: ATTENDANCE IS HIGHLY RECOMMENDED. With the exceptions of exam dates, you are not required to attend lectures; however, you are responsible for all material covered in lecture including changes to the syllabus.

Grading: LECTURE GRADE = 80% OF FINAL GRADE; LAB GRADE = 20% OF FINAL GRADE. The following grading scale will be used to determine your grade for the course; A - 90 to 100%, B - 80 to <90%, C - 70 to <80%, D - 60 to <70%, F - <60%.

Expectations for Out-of-Class Study: Beyond the time required to attend each class meeting, you should expect to spend at least an additional 9 hours per week in course-related activities, including reading required materials, completing assignments, preparing for exams, etc

Absence from exams: You are required to be present for announced examinations. You will be considered absent if you enter the classroom and request an exam AFTER someone in the class has already completed the exam and left the room. Other absences will be excused only with written request by a physician, other responsible professional, or with proof of jury duty. If you miss an exam, you will be given an exam score of zero. Exams missed due to excused absence must be taken within one day of your return to class. No other make-up exams will be given.

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of

that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Academic Integrity: You are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

"Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts."

Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

At UT Arlington, academic dishonesty is completely unacceptable and will not be tolerated in any form, including (but not limited to) "cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts" (UT System Regents' Rule 50101, §2.2). Suspected violations of academic integrity standards will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

Student Success Programs: The University of Texas Arlington supports a variety of student success programs to help you connect with the University and achieve academic success, deal with personal situations, and better understand concepts and information related to courses. Resources include learning assistance, developmental education, advising and mentoring, admission and transition, and federally funded programs. If you require assistance academically, personally, or socially you should visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Lab Safety Training **Students registered for this course must complete all required lab safety training prior to entering the lab and undertaking any activities.** Once completed, Lab Safety Training is valid for the remainder of the same academic year (i.e., through the following August) and must be completed anew in subsequent years. There are no exceptions to this University policy. Failure to complete the required training will preclude participation in any lab activities, including those for which a grade is assigned.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

Student Feedback Survey: At the end of each term, you should complete a Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to you through MavMail approximately 10 days before the end of the term. Your feedback enters the SFS database anonymously and is aggregated with that of others enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; you are strongly urged to participate. For more information, visit http://www.uta.edu/sfs.

Final Review Week A period of five class days prior to the first day of final examinations in the long sessions is designated as Final Review Week. The purpose of this week is to allow you sufficient time to prepare for final examinations. During this week, there will be no scheduled activities such as required field trips or performances, and no instructor should assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabi. During Final Review week, an instructor should not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor should give any portion of the final examination during Final Review Week

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After Hours Safety Escort: The Sam Mav Escort service provides a service to assist students, faculty, staff and campus visitors to reach their destinations after regular business hours. The hours of service are 7:00 p.m. to 1:00 a.m., Sunday through Saturday. 817-272-3381. In case of an on-campus emergency, call the **UT Arlington Police Department at 817-272-3003 (non-campus phone), 2-3003 (campus phone). You may also dial 911.**

Emergency Exit Procedures: Should we experience an emergency that requires us to vacate the building, you should exit the room and move toward the nearest exits, which are located immediately across the hall, at the right end of the hall or at the left end of the hall. When exiting the building during an emergency, never take an elevator…use the stairwells. I will assist you in selecting the safest route for evacuation and will arrange to assist handicapped individuals.

Changes to the syllabus: The following serves only as an outline. Our progress in covering material may warrant changes in this outline. I reserve the right to adjust this schedule in any way necessary to meet the course objectives. Instructor: Syed Abbas

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Sequence of Lecture Discussions:

LIST OF TOPICS-BIOL 3444-FALL 2014

NOTE: THESE NUMBERS REFER TO CHAPTERS IN THE THIRTEENTH EDITION OF BROCK BIOLOGY OF MICROORGANISMS.

I. PRINCIPLES OF MICROBIOLOGY

1. Microorganisms and Microbiology

2. A Brief Journey to the Microbial World
3. Cell Structure and Function in Bacteria and Archaea
II. METABOLISM AND GROWTH
4. Nutrition, Culture, and Metabolism of Microorganisms
5. Microbial Growth
III. MOLECULAR BIOLOGY AND GENE EXPRESSION
6. Molecular Biology of Bacteria
8. Regulation of Gene Expression
IV. VIROLOGY, GENETICS, AND GENOMICS
9. Viruses and Virology
10. Genetics of Bacteria and Arachaea
VIII. ANTIMICROBIAL AGENTS AND PATHOGENICITY
26. Microbial Growth Control
INTRODUCTION TO IMMUNOLOGY - CHAPTER READING WILL BE PROVIDED BY INSTRUCTOR.
36. Food Preservation and Foodborne Microbial Diseases