

Biology 3444-002: General Microbiology Spring 2016

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Office Hours	Monday, Wednesday, and Friday 11:00 - 11:50 am
Course Number, Section Number, and Course Title	Biology 3444-002, General Microbiology
Course Location and Time	SH 121, Monday, Wednesday, and Friday 10:00 - 10:50 am

Course Description: Fundamental principles of microbiology including the structure and function of microbial cells and their activities in nature.

Student Learning Outcomes: Upon completion of this course, students should be able to:

- i) Understand and use the basic vocabulary of microbiology
- ii) Diagram a bacterial cell, noting the differences in gram positive, gram negative, and archaeal cell structures.
- iii) Correlate differences in microbial cell structure with difference in cellular functions.
- iv) Explain the metabolic pathways used to generate energy within prokaryotic cells.
- v) Interpret bacterial growth curves, describing processes occurring at each phase.
- vi) Compare and contrast the processes of microbial transcription, translation, and replication.
- vii) Describe the causes and consequences of mutations on microbial growth, evolution, and the generation of microbial diversity.
- viii) Describe microbial pathogenic determinants and corresponding host defense mechanisms.
- ix) Explain how microbial diseases are identified, controlled.
- x) Demonstrate how microbes adapt to their environment.
- xi) Classify microbes into taxonomic categories and justify the classification scheme used.

Requirements: Biology 1441 (Cell and Molecular Biology) and one year of Chemistry

Required Textbooks and Other Course Materials: Brock Biology of Microorganisms 13th ed., by Madigan et al. I will also often supplement the book with material from other sources.

Exams: There will be four exams during the course. The first three exams will cover the subject for that portion of the course (see tentative schedule of lectures). The final exam (4th) will be comprehensive. In the final exam, approximately half will cover the material presented since the third exam, and the rest will be comprehensive. You may be required to bring to each exam a NO. 2 lead pencil and a SCANTRON 882-ES 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. The format of examinations may be multiple choice, true/false, and/or short essay questions.

Grading Policy: Your performance in this course will be assessed through four examinations as described above. While each exam will contribute 17% to your final grade, the comprehensive final exam will contribute 29% (See below for more detail). The grade you receive for the laboratory section of the course will be 20% of your final grade. Exams will be announced at least one week prior to the exam date. The schedule of exams will depend upon our progress through the material. The following grading scale will be used to determine your final grade.

<u>Source</u>	<u>Portion</u>	<u>Grade</u>	<u>Percentile</u>
Laboratory	20%	A	> 90%
Exam 1	17%	B	80 - 89%
Exam 2	17%	C	70 - 79%
Exam 3	17%	D	60 - 69%
Exam 4 (final)	29%	F	< 60%
Total	100%		

Attendance Policy: 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.

Make-up Exam Policy: You are required to be present for announced examinations. Absences will be excused only with written request by a physician, other responsible professional, or with written proof of jury duty. No exceptions. 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.

Drop Policy: Students 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, students must see their academic advisor to drop a class or withdraw. Undeclared students 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. Last day to drop the class is April 1, 2016 at 4:00 pm. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students 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://www.uta.edu/aao/fao/>).

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: Students enrolled in this course 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.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. 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.

Academic Dishonesty: It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. According to the UT System Regents' Rule 50101, §2.2, "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."

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may 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, students enrolled in classes categorized as "lecture," "seminar," or "laboratory" shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students 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 shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall 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 syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located at the south (the 1st floor) of Science Hall. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.

Tentative schedule of lectures Spring 2016

Week	Topic	Reading
W1 (Jan. 20, 22)	- Introduction to Microbiology	Chapter 1
W2 (Jan. 25, 27, 29)	- History of Microbiology - A brief journey to the microbial world	Chapters 1 & 2
W3 (Feb. 1, 3, 5)	- A brief journey to the microbial world - Cell structure and function	Chapters 2 & 3
W4 (Feb. 8, 10, 12)	- Cell structure and function - Prokaryotic vs. eukaryotic cell biology - Metabolism and growth	Chapter 3 & additional reading (Chapter 3 & 4 in Prescott Microbiology 7 th ed. by Willey et al., 2008.) Chapter 4
W5 (Feb. 15, 17, 19)	- Exam #1 - Metabolism and growth	Chapter 4 Some in Chapters 13 & 14
W6 (Feb. 23, 24, 26)	- Metabolism and growth	Chapter 4 Some in Chapters 13 & 14
W7 (Feb. 29, Mar. 2, 4)	- Environmental factors influencing microbial growth	Chapter 5
W8 (Mar. 7, 9, 11)	- Molecular biology of bacteria - Archaeal and eukaryotic molecular biology	Chapters 6 & 7
W9 (Mar. 14, 16, 18)	- Spring break	
W10 (Mar. 21, 23, 25)	- Exam #2 - Molecular biology of bacteria - Archaeal and eukaryotic molecular biology	Chapters 6 & 7
W11 (Mar. 28, 30, Apr. 1)	- Molecular biology of bacteria - Archaeal and eukaryotic molecular biology	Chapters 6 & 7
W12 (Apr. 4, 6, 8)	- Regulation of gene expression	Chapter 8
W13 (Apr. 11, 13, 15)	- Viruses and Virology - Genetics of Bacteria and Archaea	Chapters 9 & 10
W14 (Apr. 18, 20, 22)	- Exam #3 - Methods in Microbial ecology	Chapter 22
W15 (Apr. 25, 27, 29)	- Microbial symbioses: parasitism, commensalism, and mutualism - Microbial interactions with humans - Epidemiology and Diseases <i>*Note that Dr. Ed. DeLong will visit UTA to give us a seminar (April 28, Thursday at 4:00 pm)</i>	Chapters 25 & 27 Chapters 32, 33 - 36
W16 (May 2, 4, 6)	- Epidemiology and Diseases - Final Review	Chapters 32, 33 - 36
Final exam (May 9)	- Final exam (comprehensive)	