

## **Biology 3444-001: General Microbiology Fall 2009**

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<b>Office Hours</b>	Monday, Wednesday, and Friday 9:50 am - 10:50 am
<b>Course Number, Section Number, and Course Title</b>	Biology 3444-001, General Microbiology
<b>Course Location and Time</b>	LS Room 118, Monday, Wednesday, and Friday 9:00 - 9:50 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 (General Biology) or equivalent

**Required Textbooks and Other Course Materials:** Brock Biology of Microorganisms 12<sup>th</sup> ed., by Madigan et al. 2009. 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 (4<sup>th</sup>) 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 18% to your final grade, the comprehensive final exam will contribute 26% (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	18%	B	80 - 89%
Exam 2	18%	C	70 - 79%
Exam 3	18%	D	60 - 69%
Exam 4 (final)	26%	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.

**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 October 30. 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. Contact the Financial Aid Office for more information.

**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.

### **Important University Policies**

**Americans With Disabilities Act:** The University of Texas at Arlington is committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 92-112 - The Rehabilitation Act of 1973 as amended. With the passage of federal legislation entitled *Americans with Disabilities Act (ADA)*.

It is your responsibility to inform me of your disability at the beginning of the semester and to provide authorized documentation through designated administrative channels. If you require accommodation based on disability, I would like to meet with you in my office the first week of class to discuss your special needs.

**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 Available:** The University of Texas at Arlington supports a variety of student success programs to help you connect with the University and achieve academic success. These programs include learning assistance, developmental education, advising and mentoring, admission and transition, and federally funded programs. Students requiring assistance academically, personally, or socially should contact the Office of Student Success Programs at 817-272-6107 for more information and appropriate referrals.

**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 syllabi. 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. Classes are held as scheduled during this week and lectures and presentations may be given.

**Drop for non-payment of tuition:** Payment must be received by the term due date of August 19, 2009 or your registration will be cancelled. If your registration is cancelled for non-payment, you may reregister for classes but only if seats are available.

**Bomb Threats:** If anyone is tempted to call in a bomb threat, be aware that UTA will attempt to trace the phone call and prosecute all responsible parties. Every effort will be made to avoid cancellation of presentations/tests caused by bomb threats. Unannounced alternate sites will be available for these classes. Your instructor will make you aware of alternate class sites in the event that your classroom is not available.

The University of Texas at Arlington has adopted the University email address as an official means of communication with students. Through the use of email, UT-Arlington is able to provide students with relevant and timely information, designed to facilitate student success. In particular, important information concerning registration, financial aid, payment of bills, and graduation may be sent to students through email.

**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

### **Other Policies**

**Electronic Communication Policy:** The University of Texas at Arlington has adopted the University "MavMail" address as the sole official means of communication with students. MavMail is used to remind students of important deadlines, advertise events and activities, and permit the University to conduct official transactions exclusively by electronic means. For example, important information concerning registration, financial aid, payment of bills, and graduation are now sent to students through the MavMail system. All students are assigned a MavMail account. ***Students are responsible for checking their MavMail regularly.*** Information about activating and using MavMail is available at <http://www.uta.edu/oit/email/>. There is no additional charge to students for using this account, and it remains active even after they graduate from UT Arlington.

**Smoking, Food, and Drink in the Lecture Hall:** University regulations prohibit smoking, eating, and drinking in lecture halls.

**Cell Phone:** *Ringers must be turned off during class.*

## Tentative schedule of lectures

Week	Topic	Reading
W1 (Aug. 24, 26, 28)	- Introduction to Microbiology - History of Microbiology	Chapters 1-2
W2 (Aug. 31, Sep. 2, 4)	- Chemistry of Cellular Components - Cell structure and function	Chapters 3-4
W3 (Sep. 9, 11)	- Cell structure and function - Prokaryotic vs. eukaryotic cell biology	Chapter 4 & additional reading (Chapter 3 & 4 in Prescott Microbiology 7 <sup>th</sup> ed. by Willey et al., 2008.)
W4 (Sep. 14, 16, 18)	- Microbial nutrition and growth - <b>Exam #1</b>	Chapter 5 & 6
W5 (Sep. 21, 23, 25)	- Microbial growth - Environmental factors influencing microbial growth - Metabolism	Chapters 5 & 6
W6 (Sep. 28, 30, Oct. 2)	- Molecular biology	Chapters 7 & 8
W7 (Oct. 5, 7, 9)	- Molecular biology - Gene expression and regulation	Chapters 7 & 8 Chapter 9
W8 (Oct. 12, 14, 16)	- Microbial genetics and genomics - Genetic engineering - <b>Exam #2</b>	Chapters 11 & 13 Chapter 12
W9 (Oct. 19, 21, 23)	- Essentials of Virology - Microbial taxonomy, identification, and diversity - Microbial ecology: Understanding microbial communities in their natural habitats	Chapter 10 Chapter 14  Chapters 22 & 23
W10 (Oct. 26, 28, 30)	- Microbial ecology: Biogeochemical cycling and biodegradation - Symbioses: parasitism, commensalism, and Mutualism	Chapter 24  Chapters 23 & 24
W11 (Nov. 2, 4, 6)	- Industrial microbiology and biotechnology	Chapters 25 & 26
W12 (Nov. 9, 11, 13)	- Host-parasite relationship - Essentials of Immunology	Chapter 28 Chapter 29
W13 (Nov. 16, 18, 20)	- <b>Exam #3</b> - Essentials of Immunology	Chapters 29 & 30
W14 (Nov. 23)	- Epidemiology - Thanksgiving break	Chapter 33
W15 (Nov. 30, Dec. 2, 4)	- Epidemiology and Diseases - Final Review	Chapters 33, 34 - 37
Final exam	- <b>Final exam</b> (comprehensive)	