

**Bacterial Structure and Function**  
**Biology 4445; Section 002; M,W, F @ 9:00-9:50, LS 121**  
**Fall 2003**

**General information:**

Instructor: Dr. Thomas Chrzanowski

Office: 243 Life Sciences

Phone: 817.272.2404

Office Hours: Mon., Wed. : 10:00-11:00 am

Textbook: The Physiology and Biochemistry of Prokaryotes (2<sup>nd</sup> ed.) by David White. Oxford University Press.

Other reading: You are responsible for reading assigned.

**Learning Objectives/Goals:**

The goal of this course is to conduct an in-depth review of cellular structure, function, and regulation.

**Prerequisites:**

Biology 2451 (General Microbiology) or equivalent

**Withdrawal Policy:**

You may drop without penalty with a grade of W during the first six weeks of the semester (prior to 4 Oct.)

After 4 Oct but before 15 Nov:

If you have taken scheduled examinations and maintain a grade average greater than or equal to 60%, you may drop with a W.

If you have taken scheduled examinations and maintain a grade average less than 60% you may drop with an F.

If you have not taken scheduled examinations you may drop with a grade of F.

No one will be permitted to drop after 15 Nov.

If you chose to drop the course, you may no longer attend lectures.

**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.

**Absence from exams:**

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 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.

**Smoking, food and drink in the lecture hall:**

University regulations prohibit smoking, eating, and drinking in lecture halls.

**Disability:**

If you require and accommodation based on disability I would like to meet with you in my office the first week of class to discuss your special needs.

**Laboratory:**

This is a laboratory course. The labs usually run long and are, at times, tedious. You may expect to be in the lab until midnight on more than one occasion. The lab is important to understanding the lecture. You are required to attend.

**Evaluation:**

Your performance in the lecture will be assessed through three examinations of equal value. Performance in the laboratory will be assessed from a written notebook, problem sets, and my subjective opinion of the level of your involvement. Major exams will be held at three times during the semester. Our progress will determine scheduling and exams will be announced at least one-week before the exam date. Laboratory grades will count as an additional exam score and will not be ‘curved’. The following grading scale will be used to determine your grade for the course; A - 90 to 100%, B - <90 but greater than or equal to 80%, C - <80 but greater than or equal to 70%, D - <70 but greater than or equal to 60%, F - less than 60%.

The form of examinations may be multiple choice, short essay, long essay, or whatever is best suited to the material. The form of the examinations is solely the discretion of the instructor.

Degreed students may expect additional assignments in both lecture and laboratory sections.

**Grade Repeats:**

If you are enrolled with the intention of replacing a previous grade earned in this course, you must declare your intention to do so at the registrar’s office by Census Date (8 September).

**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.

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. (Regents Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22)

**Recording Devices:**

The use of electronic devices to record lectures is forbidden without exception.

**Changes to the syllabus:**

The syllabus may be updated at any time. The syllabus serves only as an outline. Our progress in covering material may warrant changes in the outline.

**Topics to be covered:**

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**The cell and its organization**

capsules  
flagella and pili  
peptidoglycan  
teichoic acids  
lipopolysaccharide  
membranes  
nucleic acids  
proteins

**Synthesis and assembly of the cell components**

fueling and synthesis  
polymerizations  
translocation of assembly components

**Growth**

individuals and populations  
kinetics

**Regulation**

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## **Lab Topics**

**Dilutions, spectrophotometry, and cell counts**

**A simple growth curve**

**Glucose utilization and growth**

**Enzyme induction I: Diauxia**

**Enzyme induction II: Alkaline phosphatase**

**Changes in macromolecules during growth: RNA and Protein**

**Kinetics of growth: Substrate affinity constants and maximal growth rates for two organisms on two substrates**