



BIOLOGY 442

MICROBIAL PHYSIOLOGY

FALL 2010

Instructor: Prof. José R. de la Torre, Ph.D.
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Office Hours: Tuesdays 11AM-12noon; Wednesdays 1-2PM; Hensill Hall 668A

Schedule Tuesdays & Thursdays, 9:35 – 10:50 PM

Location BUS 138

Course Description

The world around us is teeming with microbial life. Microbial cells associated with our bodies outnumber our own cells 10 to one! Given their numbers, microorganisms play vitally important roles not only in our biology, but also in the biology and chemistry of the entire planet. In this course, we will explore the vast range of physiologies and metabolisms found throughout the microbial world. We will be drawing examples from both medical microbiology and environmental microbiology to get a better understanding of how microbes grow, how they respond and in turn influence their environments. We will use both the textbook and primary research papers as source material in our explorations, enabling students not only to become familiar with the subject matter, but also to develop expertise in reading and critically evaluating primary research articles. Topics to be covered will include growth dynamics and cell division, energetics, primary and secondary metabolism, symbiosis, antibiotic production and resistance, secretion systems, behavior (e.g., chemotaxis), microbial differentiation and stress response.

Prerequisites

You must have completed, with a grade of C- or better, General Microbiology (**BIOL 401**), General Microbiology Lab (**BIOL 402**), and General Biochemistry (**CHEM 349**) prior to enrollment in BIOL 442. You cannot be concurrently enrolled in these courses and BIOL 442. Students having completed equivalent coursework at other institutions need to provide evidence (e.g., unofficial transcripts) to the instructor before enrolling in BIOL 442.

If you do not meet these prerequisites, you will be dropped from the class. Students registered for the course but not attending the first two weeks of lectures may be dropped from the roll without notification.

Learning Objectives

By the end of this course, students will be able to:

- Describe the growth dynamics of microorganisms and the parameters that modulate them
- Develop an understanding of the range of microbial metabolism and energetics
- Critically read and evaluate scientific literature
- Develop interesting research questions based on lectures and readings, and formulate approaches to addressing them

Textbook

The Physiology and Biochemistry of Prokaryotes, David White, 3rd ed., Oxford Univ. Press, 2007.

Additional readings will be announced in class and made available through iLearn (<http://iLearn.sfsu.edu/>). Required readings for each lecture will be listed in the lecture schedule and on iLearn, but changes and additions may be announced in class; you should read the material before coming to class.

Examinations and Grading

Attendance and participation at all course sessions and completion of all assignments are required to receive credit for the course. There will be three in-class exams (100 points each) and a final examination (150 points). The exams will consist of some multiple-choice questions and some short answer questions. The exams are designed to test your ability to utilize the material learned in class to address problems in microbiology, not to simply memorize facts. In addition, three short quizzes (10 points each) will be given to evaluate the students' comprehension of key concepts.

In addition to the exams, students will complete 5 take-home assignments over the course of the semester. Three assignments (20 points each) will consist primarily of exercises to apply concepts learned in lecture. The final two assignments (30 points each) will consist in critically evaluating primary research articles assigned in class.

The final grade will be based on roughly 600 points:

Homeworks (5):	3	x	20 pts	=	60 pts
	2	x	30 pts	=	60 pts
Quizzes (3)	3	x	10 pts	=	30 pts
Exams (3)	3	x	100 pts	=	300 pts
Final Exam			150 pts	=	150 pts
TOTAL					600 pts

An ABCDF scale based roughly on 10 percent intervals will be used (*i.e.*, it is possible for everyone to get an A).

Missed exams and assignments may not be made up. Students will receive zero points for missed assignments or exams. Exams may only be made up if missed for a serious or compelling reason, in which case you must provide documentation of your absence.

Class Website & E-mail Policy

Course material, including handouts and assignments, will be made available online through the iLearn system (<http://iLearn.sfsu.edu/>). **Lecture notes will NOT be provided.** Files containing complex figures presented in class will be made available to students on the class iLearn website. These materials are intended to supplement your own notes, **not replace them**. If you encounter any problems downloading or printing these files, please contact the instructor.

Students are encouraged to e-mail questions to the instructor. Whenever e-mailing questions, please include "BIOL 442" in the subject line and identify yourself by signing the message with

your full name and SFSU ID number. If appropriate, responses will be posted on iLearn or discussed in class—without identifying the student. **Be advised that, in general, e-mails will receive responses within a day or two.**

Changes to the Syllabus or Lecture Schedule

The syllabus and lecture schedule are subject to change. Changes to the syllabus or lecture schedule will be announced in class and/or posted on iLearn.

Holidays

There will be no class on the following holidays:

Thu. November 11, 2010

Tue. November 23, 2010

Thu. November 25, 2010

Veteran's Day

Thanksgiving Break

Thanksgiving Break

Statement on plagiarism and cheating

Students are expected to maintain a high level of academic integrity in all work pursued at SFSU.

Cheating or plagiarism will not be tolerated under any circumstances in this class. Cheating on an examination will result in an automatic zero points for that exam. Plagiarism, defined as either direct copying or loose paraphrasing of text from any published work (including online) without appropriate referencing, or use of another person's work or ideas without appropriate attribution, will result in an automatic zero points for that entire assignment. There will be no second chances. Furthermore, any incidence of cheating or plagiarism will be reported to the Chair of the Biology Department, the Dean of the College of Science and Engineering, and the Office of Student Affairs for possible disciplinary action. Consequences can include penalties up to expulsion from the University.

Cell phones & pagers

Please silence cell phones and pagers before arriving in class.

American with Disabilities (ADA) Accommodation

The University is committed to providing reasonable academic accommodation to students with disabilities. Students with disabilities who need accommodations are encouraged to contact the instructor. The Disability Programs and Resource Center (DPRC) is available to facilitate the accommodations process. The DPRC is located in the Student Service Building and can be reached by telephone (voice/TTY 415-338-2472) or by e-mail (dprc@sfsu.edu).

Important Deadlines for Add/Drop/Withdrawal:

September 7, 2010

Deadline to drop courses using GATOR REG.

September 21, 2010

Deadline to add courses with instructor-issued permit number.

September 8 – November 16, 2010

Withdrawal period -- no documentation required.

Withdrawals will result in a "W" grade on transcript records.

November 17 – December 13, 2010

Withdrawal is permissible only for **serious and compelling reasons**. Students must file a petition to be reviewed by the Instructor and the Department Chair. Approved withdrawals will result in a "W" grade on transcript records.

"Withdrawals are not normally permitted during the final three weeks except in verified cases of accident or serious illness where the cause of withdrawal is due to circumstances clearly beyond the student's control and where the assignment of an incomplete is not practical. Ordinarily, withdrawals in this category will involve total withdrawal from the University." (SFSU Bulletin)