

Advances in Microbiology-BIOL 4802F/7913A
Fall Semester 2006
T/Th 8:35-9:25 AM
ES&T R. L1116

Instructor: Dr. Patricia A. Sobecky
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Textbook: None required (see below). Please note that primary literature readings will be given throughout the semester.

Prerequisites: Each student should have successfully completed BIOL 3310 (or an equivalent general microbiology course) and have considerable knowledge of basic microbiology facts and principles. Because of the emphasis on molecular biology techniques a working knowledge of microbial genetics would also be helpful. Students should consult and review general textbooks on microbiology, microbial ecology and microbial genetics when needed.

Course Objectives and Approach: Upon successful completion of the course students will have an understanding of current and state-of-the-art microbiology research principles and current research activities including an appreciation of the roles of microbes in natural ecosystems and applications of microorganisms to current environmental and biomedical issues. Special emphasis will be placed on students obtaining a working knowledge of current and state-of-the-art molecular tools, techniques and approaches that are currently being used in microbiological research today. General topics noted in the syllabus will be emphasized and discussed during lectures. Supplemental readings will be provided to assist in understanding the lecture topics covered. There will also be considerable references to recent literature and on-going research in the field of microbiology.

Grading: Grading will be based on three exams, one (individual) oral presentation, two homework assignments and class participation. ***Absolutely no makeup quizzes will be given, if you miss a quiz you will receive a zero.*** Should you miss a scheduled quiz but you have a valid documented medical excuse there will be one general makeup quiz (date to be announced). A detailed description of the format of oral presentations will be provided during class. Graduate students enrolled in the course will be required to lead one discussion of an assigned primary literature article and write a research paper on a topic of their choice. *GT Honor code:* Unless otherwise instructed, you may not work with other students on homework assignments. Late homework will not be accepted. For any questions involving these or any other Academic Honor Code issues, please consult me, or www.honor.gatech.edu.

Tentative Course Schedule—topics and dates may be modified due to time constraints and exam dates may be changed.

| Lecture Topics | |
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| Aug 22, 24 | Introduction and Overview |
| Aug 29 | Microbial diversity: context and perspective |
| Aug 31, Sep 5 | Hot Topic #1: Microbially mediated Environmental Quality & Sustainability (Harvesting Electricity from Microorganisms) |
| Sep 7 | TBA (homework assignment #1) |
| Sep 12, 14 | Microbial Biofuel Production |
| Sep 19, 21, 26 | Hot Topic #2: Microbial Genome Innovations |
| Sep 28 | Discussion of primary literature article (#1) |
| Oct 3 | Exam I |
| Oct 5 | TBA (homework assignment #2) |
| Oct 10, 12, 19 | Hot Topic #3: Environmental Biotechnology |
| Oct 17 | (No class/mid-term break) |
| Oct 24 | Discussion of primary literature article (#2) |
| Oct 26, 31, Nov 2 | Hot Topic #4: Microbial Infections |
| Nov 7 | Discussion of primary literature article (#3) |
| Nov 9, 14, 16 | Hot Topic #5: Microbial sensing & communication |
| Nov 21 | Exam II |
| Nov 23 | (No class/holiday) |
| Nov 28, 30 | Student presentations |
| Dec 5, 7 | Student presentations |
| Dec 13 | Exam III (2:50-5:40 pm) |

Welcome to the exciting and remarkable discipline of microbiology!