

CE 521 Environmental Biotechnology - Fall 2007

| Week | Date | Topic | Reading |
|--|---------------|--|-----------------|
| Fundamentals of Microbiology | | | |
| 1 | Aug 21, 23 | Introduction/The Microbial World | Maier Ch. 1-2 |
| 2* | Aug 28, 30 | Microbial Metabolism and Growth | Maier Ch. 3 |
| 3* | Sep 4, 6 | Role of Microorganisms in Biogeochemical Environment | Bitton Ch. 3 |
| 4* | Sep 11, 13 | Environmental Effects of Biogeochemical Cycles | supplement |
| 5* | Sep 18, 20 | Biodegradation | supplement |
| Public Health Microbiology | | | |
| 6 | Sep 25, 27 | Pathogens and Parasites in Water and Wastewater/First Exam | supplement |
| 7* | Oct 2, 4 | Indicator Microorganisms and Disinfection | supplement |
| Water and Wastewater Treatment Microbiology | | | |
| 8* | Oct 9, 11 | Water Treatment | supplement |
| 9* | Oct 16, 18 | Wastewater Treatment | supplement |
| 10* | Oct 23, 25 | Wastewater Treatment: Stoichiometry and Kinetics | Grady Ch. 2 & 3 |
| 11 | Oct 30, Nov 1 | Treatment Plant Modeling/Biological Nutrient Removal/Second Exam | Grady Ch. 4 & 8 |
| 12 | Nov 6, 8 | Biological Nutrient Removal/Anaerobic Processes | supplement |
| 13 | Nov 13, 15 | Anaerobic Processes | supplement |
| | Nov 20, 22 | Thanksgiving Break | |
| 14 | Nov 27, 29 | Student Reports | |
| 15 | Dec 4, 6 | Student Reports | |
| | TBA | Final Exam | |

Supplementary Texts: Environmental Biology for Scientists and Engineers, Vaccari, Strom, and Alleman, Wiley and Sons, 2006; Environmental Microbiology, by Maier, Pepper, and Gerba, Academic Press, 2000; Wastewater Microbiology 2nd edition, by Gabriel Bitton, John Wiley & Sons, 1999; Biological Wastewater Treatment, 2nd edition, by Grady, Daigger, and Lim, Marcel Dekker, 1999

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| Grading: | 2 exams @ 20% each | 40% |
| | Final exam | 25% |
| | Class Participation/Critiques | 15% |
| | Term Paper | 20% |

Assignments:

1. Prepare a one page critique of a current (2005-2006) literature article every week (see * weeks). This paper will be due every Tuesday at class time. Email submission is required.
2. Conduct a literature review and prepare a term paper (10 to 15 pages) on a selected topic (not related to your thesis) involving an environmental biotechnology application. The term paper topic will be due August 30, outline due Sept. 13, list of references due Oct 4, first draft due Nov. 8 and final paper will be due Nov. 27. These are strict deadlines. Missed dates will cause a decrease in the term paper grade.
3. In groups of 3 or 4, lead a discussion of a current environmental research article. Each group will be responsible for leading at least one discussion. It is expected that everyone in the class will have critically read the article prior to the discussion. Literature discussions will be held on Thursdays.

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Please address any special needs or special accommodations with me at the beginning of the semester or as soon as you become aware of your needs. Those seeking accommodations based on disabilities should obtain a Student Academic Accommodation Request (SAAR) form from the Disability Resources (DR) office (515-294-6624). DR is located on the main floor of the Student Services Building, Room 1076.