

Environmental Microbiology (Bio Sci 301 1A and Bio Sci 451)

Fall 2006

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Office Hours: 10:30-11:30 Thursdays and by appointment

Textbook: Environmental Microbiology by Maier, Pepper and Gerba, published by Academic Press. There will also be supplemental reading assignments.

Exams and Grading: The course grade will be based upon three take-home exam scores.

Those students that are taking the graduate course (451) will also prepare a presentation on a topic of interest to the student along with a NSF-style proposal. The exams will each be worth 1/3 of the course grade for students taking 301 and will be worth 1/4 of the grade for the 451 students. The presentation and proposal will be worth the remaining 1/4 of the course grade.

Topics to be covered include:

	Chapter(s) in text
What is Environmental Microbiology?	1
Microorganisms in the Environment	2
Viruses	
Bacteria and Archaea	
Fungi	
Algae	
Protozoa	
Bacterial metabolism and bioenergetics	3
Growth kinetics	
EXAM #1	
Terrestrial environments (surface and subsurface)	4
Aeromicrobiology	5
Aquatic microbiology-	6
Transport mechanisms of microbes	7
Environmental sampling and processing	8
Microscopic techniques	9
Culture based methods	10
Physiological measurement of microbial activity	11
Immunological methods	12
Nucleic acid based methods of analysis	13
Drinking water and public health	20-23
EXAM #2	
Biogeochemical cycling	14
Carbon	
Silicon	
Phosphorus	
Nitrogen	
Iron	
Manganese	
Other metals	
Biodegradation, biotransformation and bioremediation	16 & 17
Aerobic	
Anaerobic	
Risk assessment	24
Bioterrorism	
Life in extreme environments	6
Astrobiology	
FINAL EXAM	