

## **Environmental Microbiology Lab Fall**

**375:312 and 375:512**

**Lecture: Monday, 10:55 a.m. – 12:15 p.m.**

**Room 109 CDL**

**Lab: Sect. 1 – Monday, 12:35 – 3:35 p.m.  
Sect. 2 – Thursday, 12:35 – 3:35 p.m.  
Sect. 3 – Tuesday, 5:35 – 8:35 p.m.**

**Room 203 ENR**

**Dr. Craig Phelps  
Dr. Abigail Porter**

### **Lab Manual**

There is no required manual for this course. Lab modules (handouts) will be posted and available for download from the class' SAKAI website.

### **Grading**

- Attendance to all laboratory periods is expected. If you need to miss a class, please inform the instructor as soon as possible. It is not acceptable to attend a different section without approval.
- Lab results are due at the beginning of the lab period following collection of the final data.
- The Final Grade will be based on class participation (20 points), 9 lab results (10 points each), 11 pre-quizzes (5 points each), and 2 lab reports (50 points each).  
  
(Graduate students will also be responsible for completing a separate 10 page term paper (50 points))
- **Lab Reports:** You will be required to write two full lab reports (Labs #5 and #8) during the semester. Each lab report will be due in class 3 weeks after the final data is collected. See the Lab Report Guide for instructions.
- **Term papers** (graduate students only) will be a critique of a current or newly proposed method used in environmental microbiology. The focus of discussion should be the strengths and limitations of the method as compared to alternatives. Papers should be ~10 pages long plus figures and refer to at least 5 original research papers. Topics need to be approved by the instructor. Titles and Outlines are due on October 31<sup>st</sup>. Final papers are due on December 10<sup>th</sup>.

### **Ethics**

- Plagiarism of any kind will not be tolerated. All students are required to turn in their own work and properly attribute all sources. Failure to do so will result in a failing grade.
- It is expected that lab groups will collaborate on calculations and interpretations of experiments on lab reports. Other questions should be answered independently.

## **Safety**

1. Read and understand each lab procedure before starting the lab.
2. Wear safety goggles whenever working with chemicals, flame or anything that may be infective.
3. Lab coats are recommended but not required.
4. Treat all chemicals as potentially hazardous and dispose of waste according to instructions.
5. No eating, drinking or applying make-up in the lab.
6. Tie back any long hair.
7. No loose clothing or open-toed shoes.
8. No horseplay.
9. At the end of each class
  - 1) Put away all materials
  - 2) Rinse any used glassware
  - 3) Disinfect the lab bench
  - 4) Wash your hands before leaving.

## **Learning Goals**

Students completing this class will have learned:

1. how to apply math and basic science knowledge to interpret and solve environmental problems;
2. skills and techniques necessary for a successful career in the field;
3. how to design and conduct experiments and to analyze and interpret data;
4. how to work effectively in multidisciplinary teams;
5. how to communicate technical information effectively;
6. about contemporary environmental issues.

### **Contact Information:**

#### **Dr. Phelps**

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#### **Dr. Porter**

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### **Office Hours:**

Rm. 229 ENR

by appointment

## Environmental Microbiology Lab

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### Schedule

Sept.	XX	Lecture #1: Class policies, Safety and Introduction Lab #1            Sampling Trip (Passion Puddle)
	XX	Lecture #2: Microbial Physiology I Lab #2            Microscopy
	XX	Lecture #3: Microbial Physiology II Lab #3            Bacterial Culture and Transfer
Oct.	XX	Lecture #4: Bacterial Metabolism Lab #4            Winogradsky's Battery
	XX	Lecture #5: Bacterial Growth Lab #5            Enumeration + Growth Curve
	XX	Lecture #6: Coliform Lecture Lab #6            Coliform Testing
	XX	Lecture #7: Biofilms Lab #7            Biofilm Lab
Nov.	XX	Lecture #8: Soil Enzymes and Polymerases Lab #8            Alkaline Phosphatase
	XX	Lecture #9: DNA Techniques I Lab #9            DNA Extraction + Electrophoresis
	XX	Lecture #10: DNA Techniques II Lab #10          PCR
	XX	No Lecture Lab #10          Results
	XX	Lecture #11: Biogeochemistry Lab #11          Nitrogen Cycle
Dec.	XX	Wrap up