

Environmental Microbiology Lab Section 02
Monday and Wednesday, 5:35 – 8:35pm
Dr. Abigail Porter

375:312 and 375:512
Room 203 ENRSB
Fall 2013

Schedule

Sept.	4		Class policies, Safety and Introduction
	9	Lab #1	Sampling Trip (Passion Puddle) (handout)
	11	Lab #2	Microscopy (pg. 11-30)
	16	Lab #3 Lab#4	Transfer of Bacteria (pg. 37-46) Special Media (pg. 59-62)
	18	Lab #5	Smears and Stains (pg. 47-58) Labs #3 + 4 (cont.)
	23	Lab #6	Biofilms (pg. 87-91) Microbial Physiology Lecture
	25	Lab #7 Lab #8	Oxygen (pg. 71-78) Growth Curve (pg. 79-86) Lab #6 (cont.)
	30	Lab #9	Enumeration (pg. 31-35 and handout) Labs #7 + 8 (cont.) Lab #6 (cont.)
Oct.	2		Coliform Lecture Lab #9 (cont.) Lab #6 (cont.)
	7	Lab #10 Lab #11	Coliforms (MTF) (pg. 93-99) Coliforms (MF) (pg. 101-107)
	9		Lab #10 (cont.) Lab #11 (cont.)
	14	Lab #12	Rapid ID Methods (pg. 109-117) Lab #10 (cont.)
	16		Biogeochemistry Lecture Lab #12 (cont.)
	21	Lab #13 Lab #14	Nitrogen Cycle (pg. 127-137) Winogradsky's Battery (setup) (handout)

	23		Lab #13 (cont.) Lab #14 (cont.)
	28	Lab #15	Soil Microcosms/Alkaline Phosphatase (handout)
	30		DNA Lecture Lab #14 (cont.)
Nov.	4	Lab #16	DNA Extraction (handout)
	6	Lab #17	PCR (handout) Lab #14 (cont.)
	11		Lab #17 (cont.)
	13	Lab #18	DNA Fingerprinting (pg. 119-125) Lab #14 (cont.)
	18		Bioremediation Lecture
	20	Lab #19	Bioremediation (handout) Lab #14 (cont.)
	25	Lab #15	Alkaline Phosphatase (handout)
Dec.	2	Lab #14	Winogradsky's Battery (conclusion) (handout)
	4	Lab #19	Bioremediation (conclusion)
	9	Wrap-Up	
	11	No Class	

Contact Information:

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Office Hours:

ENRSB 203
 Mon. + Wed. 4:30 – 5:30 pm

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Lab Manual

The Lab Manual for this course is a custom text available only at the Rutgers University Bookstore. The title is:

BIOLOGY SYMBIOSIS by PHELPS, Edition 10
Publisher: PEARSON C; ISBN: 9780558623074

The manual will be supplemented with “handouts” that will be available for download from the class website: http://envsci.rutgers.edu/~phelps/course_page.htm

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 reports are due at the beginning of the lab period following collection of the final data.
- The Final Grade will be based on class participation (70 points), and 19 lab reports (20 points each for a total of 380)

(Graduate students will also be responsible for completing a separate 10 page term paper.)

- 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 30th. Final papers are due on December 9th.

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. the importance of ethical responsibilities;
7. about contemporary environmental issues.