

**MICROBIAL ECOLOGY (MB 448/548)
SPRING 2014**

Instructors. Dr. Kimberly H. Halsey, Nash Hall, Room 354, Phone 541-737-1831,
email, halseyk@science.oregonstate.edu
Dr. Peter J. Bottomley, Nash Hall, Room 348, Phone 541-737-1844,
email, Peter.Bottomley@oregonstate.edu

Course Objectives.

- (1) To obtain an overview of the diversity of metabolic capabilities in the microbial world and place it into an ecological context.
- (2) To provide an overview of the essential roles that microorganisms play in some of the environments on Earth.
- (3) To generate an understanding of the physical and chemical characteristics of natural environments that interact with microbial life and influence its activities.
- (4) To develop an understanding of the interactions that occur among microorganisms that are essential for life on Earth.

Course outline.

- (1) The concepts of microbial ecology.
- (2) Microbial energetics and its links to ecology.
- (3) Microbial ecology and examples of microbial growth strategies in aquatic ecosystems.
- (4) Consequences of microbial trophic levels in aquatic ecosystems.
- (5) Microbial ecology and examples of microbial growth strategies in terrestrial ecosystems.
- (6) Microbial processing of wastewater and bioremediation of hazardous wastes.

Course format. Three lectures per week, MWF 11:00am to 11:50am.

Undergraduate recitation: TBA, depending upon class schedules.

Graduate recitation. Monday, Noon-1pm,
Room TBA.

Textbook: None specified.

Specific handouts will be provided in class and on "Blackboard".

Exam schedule:

**1. MIDTERM: TUESDAY, April 29, 2014,
Evening. 6:30 pm to 9:30 pm, Nash Hall Rm. 204**

**2. FINAL EXAM: WEDNESDAY, JUNE 11, 2014
2:00 pm to 4:00pm, Nash Hall Rm. 204**

For undergraduates, the midterm will be worth 45% and the final 55% of the total grade.

For graduate students, midterm and final written exams will be each worth 45% toward the final grade. Other assignments will account for the remaining 10%.

Learner outcomes (undergraduate):

The intention of the course is for students to demonstrate ability to:

1. Acquire specialized knowledge about microorganisms and environmental science relevant to microbial ecology.
2. To retain key concepts relevant to understanding the fundamentals of microbial behavior in specific environments.
3. To demonstrate some ability to evaluate and interpret quantitative information on microbial behavior in specific environments.
4. To demonstrate an ability to communicate in writing about microbial behavior in specific environments.

Learner outcomes (graduate):

5. To demonstrate ability to integrate and analyze experimentally derived data and provide a critical interpretation/analysis.
6. To communicate scientific concepts and the outcome of critical data analysis both orally and in writing.