SOIL ECOLOGY

11:375:453 and 16:375:573

Time: Wed 12:35 – 1:55 pm
Fri 2:15 – 3:35 pm

Place: 20 Loree, Cook Campus

Instructor: Jeffra Schaefer
ENR 356
(848) 932-5779
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Office hrs: Monday 10 – 10:30 am, immediately after Wed class, or by arrangement

Textbook (recommended): E. A. Paul (Editor). 2014. Soil Microbiology, Ecology, and Biochemistry. 4th Edition. Academic Press.

i>Clicker is required for this course. Must have the either the i>Clicker device or use REEF polling software on a mobile phone. Credit will be participatory only.

LEARNING GOALS:
This class will contribute toward students' ability to:

- apply knowledge from the sciences and mathematics to environmental problems and solutions
- think critically about how to design and conduct experiments, and analyze and interpret data
- learn contemporary environmental science issues and the impact of environmental science in a global and societal context.

TEACHING METHODS:
Attendance and participation is mandatory. This will be assessed through the use of i>Clickers, listening and evaluating student presentations and by asking/answering questions. Lecture materials will be provided for you on the Sakai website. Recommended reading material will be provided on the Sakai website for each topic area. It is strongly recommended that you look over the reading material prior to class. A problem set and review session will be provided prior to each exam. There will be three in-class exams and **no final exam**.

PROBLEM SETS:
Problem sets will be assigned. You will have one week to complete them. They **must** be turned in on time. No electronic copies will be accepted; hard copies must be turned in to the instructor for credit. Only one late assignment (with points deducted) will be permitted over the course of the semester.

PRESENTATIONS:

There will be a few presentations throughout the semester which will be led by graduate students. The dates will be provided on the calendar on the home page of Sakai. It is your responsibility to know when these presentations occur and to plan accordingly. All students are required to read the journal article ahead of time and attend these presentations. Students can ask questions and will evaluate the presentation to provide feedback to the student presenters. The material presented is required knowledge and you can expect at least one question to be on the exam.

QUIZZES:

Quizzes will be given on-line (Sakai). These are individual assessments and not a group activity. You will be asked to sign an honor agreement and must complete the quiz by yourself.

EXAMS:

This course is broken into three sections. There will be one exam per section, for a total of three exams. The exams are not cumulative; however, they build in complexity, requiring knowledge from the earlier sections. A study guide will be provided a week before the exam and a review session will be held to go over the material.

ASSESSMENTS:

11:375:453 (400 pts total)

Exams (3 total, in class)	300 pts
i>Clicker Q&A	10 pts
Problem Sets & Peer Assessments	30 pts
Presentation Evaluations	10 pts
Quizzes (Sakai on-line)	50 pts

16:375:573 (450 pts total)

Exams (3 @ 100 points each)	300 pts
Written Critical Review & Peer Assessment	50 pts
Presentation	50 pts
i>Clicker Q&A	10 pts
Problem Sets & Peer Assessments	30 pts
Presentation Evaluations	10 pts

Tentative Lecture Schedule, Fall 2015:

Date	Topic
9/2	Introduction to Soil Ecology
9/4, 9/9	1. Soil Properties & Microbial Function
9/11	2. Microbial Biomass
9/16, 9/18	3. Microbial Growth and Metabolism
9/23	4. Microbial Diversity
9/25	5. Soil Enzymes
9/30	REVIEW
10/2	**EXAM 1 – In class**
10/7, 10/9	6. Abiotic System Controllers of Biological Activity
10/14, 10/16	7. General Microbial Interactions
10/21, 10/23	8. Rhizosphere and Mycorrhizae
10/28	REVIEW
10/30	**EXAM 2 – In class**
11/4	9. Introduction to Biogeochemical Cycles
11/6, 11/11	10. Carbon Transformations in Soil
11/13	11. Nitrogen Cycle: Mineralization/Immomobilization
11/18	12. Nitrogen Cycle: Nitrogen Fixation
11/20	13. Nitrogen Cycle: Nitrification
11/25	NO CLASS
12/2	14. Nitrogen Cycle: Denitrification
12/4	REVIEW
12/9	**EXAM 3 – In class (not cumulative)**

NO FINAL EXAM