SWS 4303C/5305C

SOIL MICROBIAL ECOLOGY

Credit Hours: 3
Semester: FALL 2025

INSTRUCTOR: Dr. Julie Meyer, CGRC 304, juliemeyer@ufl.edu, (352) 273-8189

OFFICE HOURS: Student hours are available on zoom or in-person by appointment.

COURSE WEBSITE: https://ufl.instructure.com/courses/

COURSE COMMUNICATIONS: Students may ask questions by contacting the instructor by email or through CANVAS.

REQUIRED TEXTBOOK: None. Reading assignments and materials will be available through CANVAS/UF e-learning.

MATERIALS AND SUPPLIES FEES: None.

COURSE DESCRIPTION: This course will cover soil as a microbial habitat, the diversity of soil microbial life, symbiotic interactions, and the role of soil microorganisms in biogeochemical cycles. The course will also cover a variety of methods for the study of soil microbial ecology.

PREREQUISITES: BSC 2005 and BSC 2005L (Biological Sciences for Non-Majors) or BSC2010 and BSC2010L (Integrated Principles of Biology).

COURSE GOALS AND/OR OBJECTIVES: The central objective of this course is to foster the student's ability to solve problems related to soil microbial ecology. The development of problem-solving skills will require an in-depth understanding of microbial ecology concepts and methodologies for identifying and characterizing soil microbial life.

By the end of the course, the student will be able to:

- Analyze the physiological basis for microbial activities in soil and translate those to ecological interactions and processes.

- Discuss the fundamental physiology and ecology underlying many of the important biogeochemical cycles in soils, including carbon, nitrogen, and sulfur cycles.
- Identify appropriate methods for addressing fundamental questions in soil microbial ecology.

INSTRUCTIONAL METHODS: This course is provided as a hybrid format for on-campus students in Gainesville that meets once a week for in-person discussion OR in a fully asynchronous format for Distance Education students. Pre-recorded lectures and all other instructional materials are available for all sections of the course through CANVAS/UF e-learning.

COURSE POLICIES:

All course policies regarding attendance, make-up assignments, grading, and student evaluations are consistent with the most current UF policies detailed here: https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/

In addition to the university policies on plagiarism, text answers generated with Generative Artificial Intelligence (AI) tools, including, but not limited to, ChatGPT and Grok, are considered plagiarism and are strictly prohibited in this course.

GRADING POLICIES:

METHODS BY WHICH STUDENTS WILL BE EVALUATED AND THEIR GRADE DETERMINED

The final grade reflects the individual student's mastery and comprehension of the subject material presented during the semester. The grading will not be based on a bell curve. Weighting of assignments/exams is listed in the table below.

Assignment Weights	
Assignments	20%
Discussions	20%
Graded quizzes	30%
Exams	30%
Total	100%

GRADING SCALE:

91-100%	A
89-90.9%	A-
85-88.9%	B+
83-84.9%	B
79-82.9%	B-
75-78.9%	C+
73-74.9%	C
69-72.9%	C-
65-68.9%	D+
63-64.9%	D
59-62.9%	D-
below 58.9%	E

INFORMATION ON CURRENT UF GRADING POLICIES FOR ASSIGNING GRADE POINTS:

Current UF Grading policies are found here:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

COURSE SCHEDULE:

Below is the tentative course schedule for Soil Microbial Ecology for Fall 2025. This schedule is subject to modification at the discretion of the instructor.

Module	Topic	Assignment Due Dates
0	Course Orientation	Course Orientation Quiz due 8/24 Introductions Discussion due 8/24
1	Soil as a Microbial Habitat	Quiz 1 due 8/31
2	Diversity of Soil Life I	Quiz 2 due 9/7 Paper discussion due 9/7
3	Diversity of Soil Life II	Quiz 3 due 9/14 Paper discussion due 9/14
4	Soil Biotic Interactions	Quiz 4 due 9/21 Paper discussion due 9/21
5	Genetic Techniques	Quiz 5 due 9/28 Methods discussion due 9/28
6	Physiological & Biochemical Techniques	Quiz 6 due 10/5 Methods discussion due 10/5
	Mid-term Exam	Mid-term exam due 10/12
7	Microbial Genetics	Quiz 7 due 10/19 Mid-term exam due 10/19
8	Microbial Metabolism	Quiz 8 due 10/26 Paper discussion due 10/26
9	Carbon	Quiz 9 due 11/2 Paper discussion due 11/2
10	Nitrogen	Quiz 10 due 11/9 Paper discussion due 11/9
11	Sulfur, Phosphorus, & Iron	Quiz 11 due 11/16 Paper discussion due 11/16
12	Microbiome Engineering	Quiz 12 due 11/23 Paper discussion due 11/23 Build-a-Bacterium due 12/7
	Final Exam	Final exam due 12/12