

SWS6323 Advanced Microbial Ecology

Class Periods: 11:45 am – 12:35 pm Monday, Wednesday, and Friday

Location: On line; synchronous delivery

Academic Term: Spring 2022

Instructors:

Masa Fujimoto (co-coordinator); Julie Meyer (co-coordinator); Hui-Ling Liao; Sarah Strauss; Andrew Ogram

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Office Hours: By appointment

Teaching Assistants:

None

Course Description

Interactions between evolutionary history, biogeochemistry, and the activities of diverse microorganisms in soils and waters.

Course Pre-Requisites / Co-Requisites

SWS5305 Soil Microbial Ecology or SWS5308 Ecology of Waterborne Pathogens or consent of course coordinator.

Course Objectives

Students will have a strong appreciation for the diversity of microbial metabolisms and the interactions between microorganisms and their environments. Students will understand current concepts of the factors that govern community structure and activities.

Course Structure:

Instructors will present lectures and guided discussions in areas of their specialty on Mondays and Wednesdays of each week. Each Friday, students will guide discussions of critical papers suggested by the instructors. All class sessions will be delivered synchronously via Zoom. There will be no face-to-face meetings.

Materials and Supply Fees

None

Required Textbooks and Software

None

Recommended Materials

- Current reviews and research articles will be posted on the course Canvas site.

Course Schedule

| | |
|--------------------------------|--|
| Jan 5, 7: | Course Overview and Introduction to Origins of life (All; M. Fujimoto) |
| Jan 10, 12, 19, <u>21</u> : | Origins of Life; Evolution and diversity (M. Fujimoto) |
| Jan. 24, 26, <u>28</u> : | Cell-Cell interactions: Rickettsiales in coral (J. Meyer); <u>Outline for term paper due Jan. 28</u> |
| Jan 31, Feb 2, <u>4</u> : | Thiodiazotropha on seagrass (J. Meyer) |
| Feb 7, 9, <u>11</u> : | Biology and Evolution of Fungi; interactions among fungi, plants, and rhizosphere (S. Liao) |
| Feb 14, 16, <u>18</u> : | Evolutionary selection (pathogenic and mutualism) in plant-fungal relations (S. Liao) |
| Feb 21, 23, <u>25</u> : | N-cycling in anoxic systems (A. Ogram) |
| Feb 25-28: | <u>Exam 1 (content through 2/18) due Feb. 28</u> |
| Feb 28, March 2, <u>4</u> : | Anaerobic Carbon cycling; syntrophy and methanogenesis. Metal cycling. (A. Ogram) |
| March 5-12 | Spring Break |
| March 14, 16, <u>18</u> : | The rhizosphere (S. Strauss) |
| March 21, 23, <u>25</u> : | Soil health (S. Strauss); <u>First draft of paper due March 25 for peer review</u> |
| March 28, 30, <u>April 1</u> : | Evolution of catabolic systems (A. Ogram). Big data and Tiny Organisms (J. Meyer) |

April 4, 6, 8: Ecological theory and microbial ecology (M. Fujimoto)
 April 11, 13, 15: Student presentations; Final draft of paper due April 11
 April 18-20: Final Exam

Underlined dates are Fridays. Students will guide discussions of pertinent papers on each Friday.

Attendance Policy, Class Expectations, and Make-Up Policy

Attendance is mandatory. Missed exams and assignments must be excused in advance. Excused absences must be consistent with university policies in the [Graduate Catalog](#) and require appropriate documentation. Additional information can be found in [Attendance Policies](#).

Evaluation of Grades

| Assignment | Total Points | Percentage of Final Grade |
|--|---------------------|----------------------------------|
| Class Participation, including discussion sessions | 100 each | 25% |
| Midterm Exam | 100 | 25% |
| Final Exam | 100 | 25% |
| Review Paper and presentation | 100 | 25% |
| Total | | 100% |

Participation:

Students will be graded on attendance and participation during lectures (5%) and during weekly paper discussions (20%).

Exams:

Two exams worth 25% each of the total grade will be assigned. The exams will cover the portion of the course preceding each exam, and the final exam will cover only the material presented after the midterm exam. Both exams will be take-home and open book.

Term paper:

A term paper and corresponding class presentation worth 25% of the total grade will be required. The term paper is expected to be approximately 10 to 20 pages in length on a topic related to microbial ecology. The topic may not be directly related to the student's thesis or dissertation topic; however, it may be tangentially related to the thesis or dissertation topic. The topic will be agreed upon by the course coordinators, and an outline will be submitted within the first three weeks of the course. Students will present the subject matter of the term paper to the class during the last two weeks of the semester.

Grading Policy

The following is given as an example only.

| Percent | Grade | Grade Points |
|----------------|--------------|---------------------|
| 90.0 - 100.0 | A | 4.00 |
| 87.0 - 89.9 | A- | 3.67 |
| 84.0 - 86.9 | B+ | 3.33 |
| 81.0 - 83.9 | B | 3.00 |
| 78.0 - 80.9 | B- | 2.67 |
| 75.0 - 79.9 | C+ | 2.33 |
| 72.0 - 74.9 | C | 2.00 |
| 69.0 - 71.9 | C- | 1.67 |
| 66.0 - 68.9 | D+ | 1.33 |
| 63.0 - 65.9 | D | 1.00 |
| 60.0 - 62.9 | D- | 0.67 |
| 0 - 59.9 | E | 0.00 |

More information on UF grading policy may be found at:

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the [Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and respectful manner](#). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. [Summaries of course evaluation results are available to students here](#).

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." [The Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

Library Support, Various ways to receive assistance with respect to using the libraries or finding resources.

[Teaching Center](#), Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

[Writing Studio](#), 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

[Student Complaints Campus](#)

[On-Line Students Complaints](#)