Environmental Microbiology MCB6656
Fall 2022 – 3 credits

Class Location: This is a distance learning course and all class materials (e.g. lecture podcasts, discussion papers, assignments) are available online through the course website (see below).

Instructors and Contact Information:
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Virtual Office Hours: Zoom Video Chats by appointment

Zoom Link for Semester
https://ufl.zoom.us/j/91951176776?pwd=dXNqTmsxZjRmdDZHcjNzUHdDNW1TUT09
Meeting ID: 919 5117 6776
Passcode: 564709

Course Description for Environmental Microbiology:
Overview of microorganisms in the environment including: occurrence, abundance, distribution, diversity, and speciation; current research methodologies to decipher microbial processes and activities, marine microbial ecology, microbial interactions with the environment and practices of applied environmental microbiology.

Learning Objectives for Environmental Microbiology:
By the end of this course students should be able to:
1) Develop an in-depth comprehension and mastery of the fundamental concepts and methodology of environmental microbiology;
2) Analyze and discuss primary literature articles in the field of environmental microbiology to improve critical thinking and evaluation skills;
3) Write concise critiques of primary literature articles that demonstrate a comprehension of subject matter and ability to provide an argument for their critiques;
4) The students will develop oral communication skills necessary to effectively present information to scientific community.

Prerequisites: MCB3020, MCB3023 with a grade of C or better.

Required Texts: No text is required for this course. All reading material will be derived from the primary literature.

Course Organization: This course is divided into four modules that will cover four key topic areas of environmental microbiology: 1) Introduction to environmental microbiology and current methodologies in environmental microbiology (Martens-Habbena); 2) Introduction to microbial diversity and the species concept (Christner); 3) Marine microbial ecology (Stingl); and 4) Host-microbe interactions and future frontiers of environmental microbiology (Foster). See lecture schedule for more in-depth topics covered in the course.

Grading: The overall course is based on 1000 points, with each module constituting 250 points as described below.

Module 1 (250 points): Introduction to environmental microbiology and current methodologies in environmental microbiology

A. Weekly quizzes (*30 points; 3% of final grade*) – Each week there will be a quiz that needs to be completed on the Canvas course website. The quizzes will include all material covered that week. The quizzes are open book and are designed to help you stay current with the lecture and reading material.

B. Primary Literature Discussion (*50 points; 5% of final grade*) – All students will read provided primary literature papers and identify the type of research methods used and which conclusions the researchers were drawing based on the methods that were used. In a group discussion students will evaluate the strength and limitations of the papers, and develop suggestions on which alternative methods/additional methods could have improved the reported studies. Be prepared to discuss the merits (if any) of the experimental approach and results, which will occur. via Canvas. Engagement in these online chats if factored into the final grade.

C. Primary Literature Writing Assignment (*70 points; 7% of total grade*) –You will each be expected to write a **400-word** critique or "review" of the discussed research article. In this review you will in your own words provide a brief overall summary of the research paper discussed, describe the methodological approach used, and evaluate its strength and weaknesses, and how it could be improved. Write your critique in Arial, Helvetica, or Times New Roman (12 pt font). You must not plagiarize text from the papers given to you, nor should you cut and paste text from websites. Plagiarizing will result in an automatic zero on the assignment. All written assignments will be reviewed by the Canvas Turn-it-In program, which detects plagiarism. The assignment will be graded based on your understanding of the scientific content, ability to analyze the author's conclusions and methodology, and quality of writing. You will have one week to complete the assignment.

D. Written Exam (*100 points; 10% of final grade*) - Questions on the exams will take the form of multiple choice, short answer, and essay questions. These exams will allow you to demonstrate your familiarity with the concepts, terminology, and methodologies covered in Module 1. All exams will be administered through Honorlock.

Module 2 (250 points): Microbial species and speciation

A. Weekly quizzes (*30 points; 3% of final grade*) –There will be three 10 point quizzes in this module that will needs to be completed on the Canvas course website. The quizzes will include all material covered that week. The quizzes are open book and are designed to help you stay current with the lecture, discussion, and reading material.

B. Primary Literature Discussion (*50 points; 5% of final grade*) – All students are required to answer/ask questions and participate in the group discussions. Be prepared to discuss the course material via Canvas on a weekly basis. Engagement in the discussions is graded.

C. Primary Literature Writing Assignment (*70 points; 7% of total grade*) The objective of the written assignment is to examine a study that has used at least two different approaches [e.g., (meta)genomic, biochemical, physiological, morphological, and/or ecological data] to differentiate between closely related lineages of bacteria or archaea. This may include studies of isolated taxa and/or those using culture-independent approaches. The original research article you choose can be based on any study of closely related lineages of cultivated and/or uncultivated bacteria or archaea that meets the assignment objective. See the instructions for the written assignment for explicit instructions and the deadline.

D. Written Exam (*100 points; 10% of final grade*) - Questions on the exams may take the form of multiple choice, short answer, or essay questions. These exams will allow you to demonstrate your familiarity with the concepts, terminology, and methodologies covered in Module 1. All exams will be administered through Honorlock.

Module 3 (250 points): Marine Microbial Ecology

A. Weekly quizzes (*30 points; 3% of final grade*) – Each week there will be a quiz that needs to be completed on the Canvas course website. The quizzes will include all material covered that week including podcasts. The quizzes are open book and are designed to help you stay current with the lecture and reading material.

B. Primary Literature Discussion (*50 points; 5% of final grade*) – All students are required to ask questions and participate in the group discussions. Be prepared to discuss the merits of the experimental approaches and results of the reading assignments. We will have asynchronous online discussions via Canvas to talk about the reading assignments, so your engagement in these online chats will contribute to this portion of your grade.

C. Primary Literature Writing Assignment (*70 points; 7% of total grade*) –Based on the weekly discussion you will be expected to write a **400-word** critique of the research article. Write your summaries in 12 font Ariel, Helvetica, or Times New Roman. You must not plagiarize text from the papers given to you, nor should you cut and paste text

from websites. Plagiarizing will result in an automatic zero on the assignment. All written assignments will be reviewed by the Canvas Turn-it-In program, which detects plagiarism. Your objective is to evaluate and summarize the strengths and weaknesses of the paper. The assignment will be graded based on your understanding of the scientific content, ability to analyze the author's conclusions and methodology, and quality of writing. You will have one week to complete each assignment.

D. Written Exam (*100 points; 10% of final grade*) - Questions on the exams will take the form of multiple choice, short answer, and/or essay questions. These exams will allow you to demonstrate your familiarity with the concepts, terminology, and methodologies covered in this module. All exams will be administered through Honorlock.

Module 4 (250 points): Microbial interactions with the environment

A. Weekly quizzes (*30 points; 3% of final grade*) – Each week there will be a quiz that needs to be completed on the Canvas course website. The quizzes will include all material covered that week including podcasts. The quizzes are open book and are designed to help you stay current with the lecture and reading material.

B. Primary Literature Discussion (*50 points; 5% of final grade*) - It is important that you each take an active role in your own education. I expect each of you to involve yourself in the course by asking questions and participating in the group discussions. Be prepared to discuss the merits (if any) of the experimental approach and results. We will have asynchronous online discussions via Canvas to talk about the paper, so your engagement in these online chats will contribute to this portion of your grade.

C. Press Release Writing Assignment (*70 points; 7% of total grade*) – As scientists, it often falls upon our shoulders to communicate our work to the public, yet many of us have not been trained in this area. When I publish my papers often, I am occasionally asked to write a press release available to the media so that the significance of the work can be understood by general audiences. So, each of you will be asked to write a press release of **400 words minimum**. Each student will be required to take an environmental microbiology related scientific paper of your choice and write a press release that conveys the import findings and significance of the work. I will be evaluating you on your ability to convey complex ideas to the general public, while maintaining accuracy of the scientific work, as well as the quality of writing (i.e., no grammatical or punctuation errors).

All critical feedback will be provided to you via track changes in Microsoft Word and Canvas within two weeks of the final due date or prior to the last class meeting. Unless other wise noted all writing assignments are due one week after the assignment is given.

D. Written Exam (*100 points; 10% of final grade*) - Questions on the exams will take the form of short answer and essay questions. These exams will allow you to

demonstrate your familiarity with the concepts, terminology, and methodologies covered in Module 4. All exams will be administered through Honorlock.

Attendance and Make-Up Work:
Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

Grading:
For more details of the University of Florida grading policy please visit: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

930 – 1000	points	93% - 100%	A
900 – 929	points	90% - 92.9%	A-
870 – 899	points	87% - 89.9%	B+
830 – 869	points	83% - 86.9%	B
800 – 829	points	80% - 82.9%	B-
770 – 799	points	77% - 79.9%	C+
730 – 769	points	73% - 76.9%	C
700 – 729	points	70% - 72.9%	C-
670 – 699	points	67% - 69.9%	D+
630 – 669	points	63% - 66.9%	D
600 – 629	points	60% - 62.9%	D-
Less than 600 points		<60%	E

Online Course Evaluation Process
Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results.

Academic Honesty
As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "*We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.*" You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit 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*."

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code.

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.

Services for Students with Disabilities
The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation

0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

Campus Helping Resources
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- ***University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,* www.counseling.ufl.edu**
  Counseling Services
  Groups and Workshops
  Outreach and Consultation
  Self-Help Library
  Wellness Coaching

- **U Matter We Care, www.umatter.ufl.edu/**

- ***Career Connections Center,* First Floor JWRU, 392-1601, https://career.ufl.edu/.**

Student Complaints:

- Residential Course: https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/.
- Online Course: http://www.distance.ufl.edu/student-complaint-process