

SWS 4307 / 5308

ECOLOGY OF WATERBORNE PATHOGENS

Credit Hours: 3

Semester: SPRING 2021

On-campus class location: MCCC 0100

Hybrid on-campus meeting times: Wed Period 3 (9:35 – 10:25 am)

Distance education meeting times: Wed 7 – 8 pm

INSTRUCTOR: Dr. Julie Meyer
Cancer & Genetics Research Complex Rm 304
juliemeyer@ufl.edu
(352) 273-8189

OFFICE HOURS: Student hours are through zoom by appointment.

COURSE TA: Rachel Howard, CGRC Rm 330E, r.howard@ufl.edu

COURSE WEBSITE: <https://ufl.instructure.com/courses/417577>

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

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



MATERIALS AND SUPPLIES FEES: None.

COURSE DESCRIPTION: This course covers survival strategies, gene regulation, and metabolism of waterborne pathogens and methods for microbe detection and control. The central objective of the course is to foster students' ability to solve problems related to microbiological quality and safety of drinking and recreational waters. The development of problem-solving skills will require an in-depth understanding of microbial ecology concepts and methodologies for identifying and characterizing pathogens and their behaviors outside of their human hosts.

PREREQUISITES: MCB3020 (Basic Biology of Microorganisms) or MCB3023/4203 (Bacterial and Viral Pathogens) or equivalent.

COURSE GOALS AND/OR OBJECTIVES: The central objective of this course is to foster students' ability to solve problems related to microbiological quality and safety of drinking and recreational waters. The development of problem-solving skills will require an in-depth understanding of microbial ecology concepts and methodologies for identifying and characterizing pathogens and their behaviors outside of their human hosts.

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

- Identify the most common environmentally transmitted pathogens and the characteristics that make them effective pathogens.
- Propose appropriate culture-based, nucleic acid-based, and immunological methods for detecting human waterborne pathogens
- Define strategies used by human waterborne pathogens for colonization and survival in hosts and in the environment
- Analyze factors contributing to the rise of emerging and re-emerging environmentally transmitted pathogens
- Understand methods to reduce human exposure to waterborne pathogens and how to assess and communicate risk
- Communicate course concepts to a general audience

INSTRUCTIONAL METHODS: This is a “flipped” course. Students are expected to listen to the pre-recorded lectures and read the assigned readings PRIOR to attending the weekly discussion. Both on-campus students (Class # 18817 or 18518) and online students (Class # 26141 or 18543) will meet for synchronous discussions on **Wednesday mornings** during the scheduled course time. Distance education students (Class # 18819, 18519, 18520, or 18521) will meet for discussions on **Wednesday evenings** through zoom. Attendance at weekly discussion sessions is mandatory for all students.

COURSE POLICIES:

ATTENDANCE POLICY: It is the instructor's expectation that each student will keep up with posted lectures, readings, and other assignments. Requirements for class attendance and make-up exams, assignments, and other work in this course are

consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

The following policies and requirements are in place in response to COVID-19 to maintain your learning environment and to enhance the safety of our in-classroom interactions:

- You are required to wear approved face coverings at all times during the class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.
- This course has been assigned a physical classroom with enough capacity to maintain physical distancing (6 feet between individuals) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations.
- Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
- Follow your instructor's guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.
- If you are experiencing COVID-19 symptoms ([Click here for guidance from the CDC on symptoms of coronavirus](#)), please use the UF Health screening system and follow the instructions on whether you are able to attend class. [Click here for UF Health guidance on what to do if you have been exposed to or are experiencing Covid-19 symptoms](#).
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. Find more information in the university attendance policies.
- Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate

orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

EXAM DATES/POLICIES: For the Spring 2021 semester, there will be no midterm or final exams. Instead, students will take 12 open-book, open-note essay question quizzes over the course of the semester. Students will have the option to drop the two lowest quiz grades before calculation of the final course grade.

MAKE-UP POLICY: Not applicable

ASSIGNMENT POLICY: Due dates for all assignments are posted at the start of the semester. As such, late assignments will not be accepted for credit in the absence of extenuating circumstances. No extra credit assignments will be accepted. The course is designed so that students can earn points from a variety of assignment types.

COURSE TECHNOLOGY: All course materials, including recorded lectures, readings, assignments, and quizzes will be administered through CANVAS/UF e-learning. For help with CANVAS, please contact the UF Help Desk:

- <http://helpdesk.ufl.edu>
- (352) 392-HELP - select option 2

ONLINE COURSE EVALUATION: Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing online evaluations via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. 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 <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

UF POLICIES:

UNIVERSITY POLICY ON ACCOMMODATING STUDENTS WITH DISABILITIES: Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center by visiting

disability.ufl.edu/students/get-started. 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.

UNIVERSITY POLICY ON ACADEMIC CONDUCT: 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 honesty 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 (<http://www.dso.ufl.edu/sccr/process/student-conduct-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.

CLASS DEMEANOR OR NETIQUETTE: All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions, and chats.

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.

GETTING HELP:

For issues with technical difficulties for Canvas, please contact the UF Help Desk at:

- <http://helpdesk.ufl.edu>
- (352) 392-HELP (4357)
- Walk-in: HUB 132

Any requests for make-ups due to technical issues **MUST** be accompanied by the ticket number received from the Help Desk when the problem was reported to them. The ticket number will document the time and date of the problem. You **MUST** e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Other resources are available at <http://www.distance.ufl.edu/getting-help> for:

- Counseling and Wellness resources
- Disability resources
- Resources for handling student concerns and complaints
- Library Help Desk support

Should you have any complaints with your experience in this course please visit <http://www.distance.ufl.edu/student-complaints> to submit a complaint.

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. Ungraded self-assessment quizzes are available for each module.

SWS4307		SWS5308	
Self-assessment quizzes (13)	0%	Self-assessment quizzes (13)	0%
Discussion Threads (3)	15%	Discussion Threads (3)	15%
Science Communication Assignment (1)	5%	Science Communication Assignment (1)	5%
Paper Summary Assignments (10)	40%	Paper Summary Assignments (10)	35%
Graded quizzes (12)	40%	Graded quizzes (12)	35%
		Presentation	10%

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:

CRITICAL DATES: No midterm or final exams will be given. Please refer to the schedule below (also in Canvas) for due dates of assignments, discussion threads, and quizzes.

WEEKLY SCHEDULE OF TOPICS AND ASSIGNMENTS:

Discussion Date	Topic	Assignment Due Dates
Wed 1/13	Introduction	
Wed 1/20	Module 1 Pathogens & Outbreaks	Paper Summary 1 due 9AM 1/20 Quiz 1 due 1/24
Wed 1/27	Module 2 Culture-Dependent Detection Methods	Discussion Thread: Culturing Methods due 1/31 Quiz 2 due 1/31
Wed 2/3	Module 3 Culture-Independent Detection Methods	Paper Summary 2 due 9AM 2/3 Discussion Thread: Immunological Methods due 2/7 Quiz 3 due 2/7
Wed 2/10	Module 4 Water, Soil, and Air as Microbial Habitats	Paper Summary 3 due 9AM 2/10 Discussion Thread: Nucleic Acid-Based Methods due 2/14 Quiz 4 due 2/14
Wed 2/17	Module 5 Rhizosphere and Phyllosphere	Paper Summary 4 due 9AM 2/17 Quiz 5 due 2/21
Wed 2/24	Module 6 Biofilms	Paper Summary 5 due 9AM 2/24 Quiz 6 due 2/28
Wed 3/3	Module 7 Control of Human Pathogens	Paper Summary 6 due 9AM 3/3 Quiz 7 due 3/7
Wed 3/10	Module 8 Evolution of Virulence	Paper Summary 7 due 9AM 3/10 Quiz 8 due 3/14

Wed 3/17	Module 9 Acquisition of Antibiotic Resistance	Paper Summary 8 due 9AM 3/17 Quiz 9 due 3/21
Wed 3/24	Module 10 Drinking Water and Wastewater	<i>Attendance at discussion session is optional for Recharge Day 3/24</i> Paper Summary 9 due 9AM 3/24 Quiz 10 due 3/28
Wed 3/31	Module 11 Food Safety	Quiz 11 due 4/4
Wed 4/7	Module 12 Pathogens and Environmental Change	Paper Summary 10 due 9AM 4/7 Quiz 12 due 4/11
Wed 4/14	Module 13 Risk Assessment and Science Communication	Graduate Student Presentations due 4/18 Science Communication Assignment due 4/18
Wed 4/21	Final review	