

University of Florida
College of Public Health & Health Professions Syllabus
Course Number PHC6937: Mechanisms of Environmental Disease (3 credit hours)
Spring semester 2021
Delivery Format: On-Campus/Hi-flex
Tuesdays 1:55-2:45 pm & Thursdays 3:00-4:55 pm

Instructors Names: Tara Sabo-Attwood, Ph.D., Tony Maurelli, Ph.D.
Room Number: HPNP room G-114
Phone Number: 352-294-5293/ 352-294-5029
Email Address: sabo@php.ufl.edu; amaurelli@php.ufl.edu
Office Hours: TBD
Preferred Course Communications: Canvas

Prerequisites: None

PURPOSE AND OUTCOME

Course Overview

This course provides students with fundamental principles of disease mechanisms and pathogenesis that are highly relevant to environmental and occupational health. During this course we will explore how exposure to environmental agents cause adverse health outcomes on a mechanistic level. Course content centers on both chemical and microbial exposures and how they lead to injury/disease that specifically involve the immune, respiratory, gastrointestinal and neuromuscular systems. Both the human physiological and well as intricate cellular responses to environmental agents will be described.

Relation to Program and Learning Outcomes

We expect this course to fulfill a core requirement for graduate students in the PhD program in Public Health, environmental health concentration. In addition, it will be attractive to our masters students and to students in programs outside of Public Health who are interested in gaining knowledge about how chemical and biological agents cause disease at the molecular level. Concepts in this course emphasize unraveling molecular mechanisms that describe disease and the technological approaches used to help us identify such mechanisms. These concepts will be discussed in the context of disease prevention and treatment.

Competencies reinforced in this course

1. Evaluate the direct and indirect human effects of major environmental agents
2. Assess genetic, physiological and psychosocial factors that affect human susceptibility to adverse health outcomes following environmental exposure(s)
3. Develop testable hypotheses and models to evaluate biological and chemical environmental exposures
4. Demonstrate expected professional behavior, cultural sensitivity, teamwork and appropriate communication when criticizing or defending scientific research

Course Objectives and/or Goals

Upon completion of this course, students will be able to:

1. Discriminate similarities and differences between cellular/molecular mechanisms by organ system and by environmental trigger (chemical vs pathogen)
2. Implement a literature review that summarizes and critiques existing environmental disease literature for a given toxicant or pathogen
3. Design an approach to discern mechanisms associate with COVID-19 collaboratively
4. Prescribe and recognize appropriate data analysis methods for different environmental disease-related research questions and study designs

Instructional Methods

1. Lectures are for general orientation and content. Students are responsible for all the material presented in the course and assigned readings. This will be the main source of content in this course. This is a synchronous hybrid course which means lectures are to be attended live by all students in a synchronous in-class environment or synchronous online environment.
2. Readings and Resources: In addition to the required text, we will post supplementary readings and resources in the course. The reading list may be supplemented during the course.
3. Assessments: We will use a variety of assessments in this course, including but not limited to assignments that involve written and oral presentation formats.

What is expected of you?

You are expected to view all lectures (live in-person or online) and complete all readings and assignments. Additionally, you are expected to actively engage in the course throughout the semester. Your participation fosters a rich course experience for you and your peers that facilitate overall mastery of the course objectives.

DESCRIPTION OF COURSE CONTENT

This course is structured into four broad 'systems' that include immune, respiratory, gastrointestinal and neural. Each system will cover general physiology, cell biology and a select chemical and pathogen exposure that leads to a specific type of injury/disease. A major critical thinking project will incorporate information gained from each 'system' as it related to current mechanisms that describe COVID-19. Each 'system' module may contain lectures, external links, videos, discussions and required readings as well as assignments. You are responsible for all course content regardless of the format. Approximately each month covers one system. The topical outline/course schedule below details the dates of content and assignments. Presentations are also listed.

DESCRIPTION OF COURSE CONTENT

Topic Outline/Course Schedule

Week	Date	Topic(s)	Student Activities & Presentations
1 Tues	Jan 12	Course mechanics and expectations (Sabo-Attwood, Maurelli)	
1 Thurs	Jan 14	Environmental Exposures & Agents of Disease (Sabo-Attwood)	

Week	Date	Topic(s)	Student Activities & Presentations
2 Tues	Jan 19	Immune Defenses: skin and mucosal membranes	
2 Thurs	Jan 21	Immune System: innate immune and adaptive defenses (Maurelli)	
3 Tues	Jan 26	Respiratory system physiology (Sabo-Attwood)	
3 Thurs	Jan 28	Respiratory Pathogen – <i>Legionella</i> (Maurelli)	
4 Tues	Feb 2	Respiratory Pathogen – Influenza (Dr. John Lednicky)	
4 Thurs	Feb 4	Respiratory Toxin – Particles/fibers (Sabo-Attwood)	
5 Tues	Feb 9	Respiratory Toxin - Ozone (Dr. Cody Smith, Rutgers)	
5 Thurs	Feb 11	Pick Your Agent - students	Student presentations
6 Tues	Feb 16	Class Jeopardy - students	Student participation
6 Thurs	Feb 18	Gastrointestinal system physiology (Maurelli)	
7 Tues	Feb 23	Gastrointestinal Pathogen – Norovirus (TBD Dr. Stephanie Karst)	
7 Thurs	Feb 25	Gastrointestinal Pathogen – Salmonella (TBD Dr. Mariola Edlmann)	
8 Tues	March 2	Gastrointestinal Toxin – Fluoride (Sabo-Attwood)	
8 Thurs	March 4	Gastrointestinal Toxin – Phthalates (Dr. Joe Bisesi)	
9 Tues	March 9	Class Jeopardy	Student participation
9 Thurs	March 11	Pick Your Agent - students	Student presentations
10 Tues	March 16	Nervous System Physiology (TBD)	
10 Thurs	March 18	Nervous Pathogen – Dengue (Dr. Art Lyons, Pentagon)	
11 Tues	March 23	Final project check in	
11 Thurs	March 25	Nervous Pathogen – <i>Pfisteria</i> and toxic algal blooms (Dr. Anita Wright)	

Week	Date	Topic(s)	Student Activities & Presentations
12 Tues	March 30	Nervous Toxin – Pesticides (Sabot-Attwood)	
12 Thurs	April 1	Nervous Toxin – Acrylamide (Sabot-Attwood)	
13 Tues	April 6	Pick your agent	Student presentations
13 Thurs	April 8	Class Jeopardy	Student participation
14 Tues	April 13	TBD	
14 Thurs	April 15	Final Project	Group Presentations, COVID Assignment
15 Tues	April 20	Final Project	Group Presentations, COVID Assignment
Reading days April 22-23; Final April 24-30			

Course Materials and Technology

There is no required textbook for this course. Pertinent journal articles and reading materials as they apply to each module will be found on the course website; other materials will be accessible on-line.

Getting Started

1. Visit <http://lss.at.ufl.edu> and login to e-Learning in Canvas using your Gatorlink ID and password.
2. Find our course website. It will be listed as PHC6937: Mechanisms of Environmental Disease, Spring 2021.

Required Technology

Required Hardware:

Webcam and Microphone. May use laptop built in webcams, but must be able to move camera during use (see exams). A headset microphone is required for any live sessions/debates.

Additional technical requirements are outlined at <http://publichealth.php.ufl.edu/tech/>.

e-Learning in Canvas site:

There will be an online site for this course in Canvas, the learning management system supported by the University. Log in at <https://lss.at.ufl.edu/> and go to course site for PHC6937: Mechanisms of Environmental Disease, Spring 2021. Here, I will post the syllabus, lecture presentations, assignments and allow for discussions/chats amongst the students and course leaders. You will also turn in assignments through this site. Once the course begins, all communication will take place during class time or through the e-Learning in Canvas site. All course-related emails should be performed using Canvas. This will eliminate any issues with students not getting emails due to

connection problems. It will be your responsibility to check the site on a routine basis to keep up with announcements, emails, and course modifications.

For technical support related to course materials and links, please contact me and the online course coordinator (Truly Hardemon).

For technical support for this e-Learning in Canvas, please contact the UF Help Desk at:

- Available 24 hours a day, 7 days a week
- (352) 392-HELP - select option 2
- helpdesk@ufl.edu (email)
- helpdesk.ufl.edu (website)

ACADEMIC REQUIREMENTS AND GRADING

General Information

Assignments are to be submitted as a Word document or PowerPoint file unless otherwise indicated. They will be returned to students with comments. They should be submitted to Canvas. Assignments are intended as individual projects unless otherwise directed. Shared work may be treated as a form of plagiarism. Assignments may be required to be submitted via Turnitin in this course (this will be done automatically in the Canvas Assignment). This tool will pick up any passages in students' work that come from another source. Be sure to adequately cite your sources/references for these assignments to avoid plagiarism (see format below). Some similarity is expected and unavoidable, however if large portions are copied from other sources, it will be as considered plagiarism. The Canvas assignment tool will notify you confirming the submission of your assignment. PLEASE check your UFL email at <http://webmail.ufl.edu> on a regular basis for these and other email notices from the course site. If you do not receive an email confirmation within 2 hours of submission, please return to the site and resubmit your assignment. It is a student's responsibility to verify that they turn in assignments on time and that they turn in the CORRECT assignment attachment. Please take a few moments to open your submitted attachment and verify that you have submitted the correct file. You will be graded in the course through the use of written assignments, presentations, graded discussions, and participation.

Course Components

Reading course material as assigned. Attendance at lectures. Participation in discussions and in class activities.

'Pick and Agent' Assignment (30% or 100 points). Each student will be given a category (chemical or pathogen) from which they will choose an agent for study. The final agent chosen will require final approval from the instructors. Each student will be assigned a date during the first week of class when the assignment must be completed. As part of the assignment, students will independently perform a search to *identify one primary mechanism* that is related to a health outcome associated with exposure to the agent. Once you have researched the mechanism you will prepare a 15 minute oral presentation that will be delivered to the class on the assigned date. Each presentation will follow and outline provided with a detailed rubric that is uploaded to canvas.

Class participation (30% or 100 points), Class Jeopardy. Students will be expected to display a command of the fundamental concepts during class discussions through an assignment called 'Class Jeopardy'. After content lectures have been completed for each 'system' the class will engage in the Class Jeopardy exercise. Instructors will prepare and ask a series of questions

related to content covered in the course. Students will garner points for each question they attempt to answer (1 point) and for each answer that is correct (1 point). Cumulative points will be counted towards your participation grade. A more detailed rubric will be posted on canvas.

Final Project: COVID-19 (40% or 150 points). Students will complete this assignment as a team. Each team, selected by the instructors at the start of the semester, will develop a framework that describes the potential mechanisms whereby SARS-CoV-2 causes COVID-19. The mechanisms will be focused on the organ 'systems' we discuss throughout the semester which include respiratory, GI, and neural (immune spans all of these). Students will have the semester to work on this project which will culminate with both a written and oral product. The oral portion will include a 30 minute presentation to the class using power point slides to describe the mechanisms that the team is proposing as an explanation for how SARS-CoV-2 leads to COVID-19 at the molecular level. A written portion will be prepared and submitted by each student. All students in the group will receive the same grade for the oral component but an individual grade for the written component. Additional instructions and details for this assignment will be posted on canvas.

Grading

Requirement	Due date	% of final grade (points)
'Pick an Agent' Assignment	Varies	30% (300)
Final project	April 15, 20	40%(400)
Class participation (Jeopardy)	Varies	30% (300)

Total Points Earned	≥930	900-929.9	870-899.9	830-869.9	800-829.9	770-799.9	730-769.9	700-729.9	670-699.9	630-669.9	600-629.9	<600
% Points earned	93-100%	90-92%	87-89%	83-86%	80-82%	77-79%	73-76%	70-72%	67-69%	63-66%	60-62%	Below 60%
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E

Please be aware that a C- is not an acceptable grade for graduate students. In addition, a grade of C counts toward a graduate degree only if an equal number of credits in courses numbered 5000 or higher have been earned with an A.

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	W F	I	N G	S-U
Grade Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0	0.0	0.0	0.0	0.0

Please be aware that a C- is not an acceptable grade for graduate students. The GPA for graduate students must be 3.0 in all 5000 level courses and above to graduate. A grade of C counts toward a graduate degree if based on a sufficient number of credits in courses numbered 5000 or higher have been earned with a B+ or higher.

More information on UF grading policy may be found at:
<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades>
<https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

Late Assignments and Make Up Work

Assignments turned in up to 24 hours late will be deducted 10% of the grade that they would otherwise receive. Assignments turned in more than 24 hours late will not be graded and will contribute zero points toward the final grade unless arrangements have been made in advance with the instructor. Missed assignments will contribute zero points toward the final grade.

Special Circumstances. In the event of exceptional situations that may interfere with your ability to perform an assignment or meet a deadline, contact the instructor as soon in advance of the deadline as possible. Such special cases will be dealt on an individual basis, provided that you have sufficient documentation. For a missed quiz due to an excused absence, the student will work with the instructor to make up the missed quiz.

Please note: Any requests for make-ups due to technical issues MUST be accompanied by the UF Computing help desk (<http://helpdesk.ufl.edu/>) correspondence. You MUST e-mail me within 24 hours of the technical difficulty if you wish to request a make-up.

Policy Related to Required Class Attendance

Class attendance is a part of the Professionalism component of this course. It is expected that you will notify the instructor in advance when you know you will miss or be late to class.

Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation. Additional information can be found here:
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT

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Expectations Regarding Course Behavior

You are expected to maintain a civil tone and respect the opinions of other posters. While commenting on others' posts is encouraged, aggressive or patronizing tone and language are unacceptable and may result in the loss of your posting and discussion privileges.

Communication Guidelines

You are encouraged to contact by email using the "Inbox" in Canvas for clarification and assistance with the course material and the assignments, and for special issues that may arise. Weekday daytime (US Eastern Time) emails have the best chances of being answered quickly. Please only use the Canvas "Inbox" to communicate with the course instructor and/or TA. While the instructors and TAs will check their UFL email regularly, they will not be held responsible for email sent directly to their UFL addresses.

Academic Integrity

Students are expected to act in accordance with the University of Florida policy on academic integrity. 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 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 additional information regarding Academic Integrity, please see Student Conduct and Honor Code or the Graduate Student Website for additional details:

<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>

<http://www.graduateschool.ufl.edu/about-us/>

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

Plagiarism is especially damaging in an online learning environment and will be dealt with in an official way, according to University of Florida regulations. Incidents will be reported directly to the Office of Student Judicial Affairs and a formal procedure will be started in each and every case. There will be no informal incident resolution between student and instructor. Should you have any doubts on whether something constitutes plagiarism, please consult the many available resources on the topic, e.g. starting with <http://web.uflib.ufl.edu/msl/subjects/Physics/StudentPlagiarism.html>, or contact the instructor in advance. There is also a reference posted in the course site, in the Course Help link. As you submit assignments, you will have the opportunity to check it for unintentional plagiarism using Turnitin®, the same software that instructors will use to check your work. You are encouraged to take advantage of this option. If you turn in assignments that are plagiarized, you will receive zero points for that assignment.

You are expected to turn in original work in this course. This means that when answering assignment questions, writing papers, posting discussions, etc., you will be expected to write your responses in your own words. You **MAY NOT** copy answers word for word from any course materials or outside sources. On occasion it may be useful to provide a quote from course materials or outside sources in which case you must properly cite the source and place the quote in quotation marks. That being said we urge you to avoid excessive quotation as it does little to demonstrate your understanding of course material.

Online Faculty Course Evaluation Process

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online 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/>.

Commented [V1]: Updated July 31, 2019 in accordance with GatorEvals launch.

On Campus Face-to-Face

We will have face-to-face instructional sessions to accomplish the student learning objectives of this course. In response to COVID-19, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions.

Commented [V2]: Required as of August 2020. Select appropriate one for your course.

- You are required to wear approved face coverings at all times during 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 (<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>), please use the UF Health screening system (<https://coronavirus.ufhealth.org/screen-test-protect/covid-19-exposure-and-symptoms-who-do-i-call-if/>) and follow the instructions on whether you are able to attend class.
 - 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 (<https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>).

Online Synchronous Sessions:

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.

Commented [V3]: Required as of August 2020 (if applicable)

Policy Related to Guests Attending Class:

Only registered students are permitted to attend class. However, we recognize that students who are caretakers may face occasional unexpected challenges creating attendance barriers. Therefore, by exception, a department chair or his or her designee (e.g., instructors) may grant a student permission to bring a guest(s) for a total of two class sessions per semester. This is two sessions total across all courses. No further extensions will be granted. Please note that guests are **not** permitted to attend either cadaver or wet labs. Students are responsible for course material regardless of attendance. For additional information, please review the Classroom Guests of Students policy in its entirety. Link to full policy: <http://facstaff.php.ufl.edu/services/resourceguide/getstarted.htm>

SUPPORT SERVICES

Accommodations for Students with Disabilities

If you require classroom accommodation because of a disability, it is strongly recommended you register with the Dean of Students Office <http://www.dso.ufl.edu> within the first week of class or as soon as you believe you might be eligible for accommodations. The Dean of Students Office will provide documentation of accommodations to you, which you must then give to me as the instructor of the course to receive accommodations. Please do this as soon as possible after you receive the letter. Students with disabilities should follow this procedure as early as possible in the semester. The College is committed to providing reasonable accommodations to assist students in their coursework.

Students in UF Health Sciences programs should be mindful that unique course accommodations may not be applicable in a clinical, fieldwork or practicum setting. Thus, planning a semester in advance with the DRC Health Sciences Learning Specialist, Lisa Diekow ldiekow@ufsa.ufl.edu, is highly encouraged.

Commented [V4]: Please note this statement is optional
(Updated April 17, 2020)

Counseling and Student Health

Students sometimes experience stress from academic expectations and/or personal and interpersonal issues that may interfere with their academic performance. If you find yourself facing issues that have the potential to or are already negatively affecting your coursework, you are encouraged to talk with an instructor and/or seek help through University resources available to you.

- The Counseling and Wellness Center 352-392-1575 offers a variety of support services such as psychological assessment and intervention and assistance for math and test anxiety. Visit their web site for more information: <http://www.counseling.ufl.edu>. On line and in person assistance is available.
- You Matter We Care website: <http://www.umatter.ufl.edu/>. If you are feeling overwhelmed or stressed, you can reach out for help through the You Matter We Care website, which is staffed by Dean of Students and Counseling Center personnel.
- The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: <https://shcc.ufl.edu/>
- Crisis intervention is always available 24/7 from:
Alachua County Crisis Center:
(352) 264-6789
<http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx>

Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance.

Inclusive Learning Environment

Public health and health professions are based on the belief in human dignity and on respect for the individual. As we share our personal beliefs inside or outside of the classroom, it is always with the understanding that we value and respect diversity of background, experience, and opinion, where every individual feels valued. We believe in, and promote, openness and tolerance of differences in ethnicity and culture, and we respect differing personal, spiritual, religious and political values. We further believe that celebrating such diversity enriches the quality of the educational experiences we

provide our students and enhances our own personal and professional relationships. We embrace The University of Florida's Non-Discrimination Policy, which reads, "The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act." If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see your instructor or refer to the Office of Multicultural & Diversity Affairs website: www.multicultural.ufl.edu