

**University of Florida**  
**College of Public Health & Health Professions Syllabus**  
**PHC 6702: Environmental Monitoring and Exposure Assessment (3 credit hours)**  
Spring 2024 (Jan 8 – Apr 24)  
Delivery Format: In-class, Lecture, Mon (1:55 PM – 3:50 PM) & Wed (3:00 PM – 3:50 PM)  
Classroom: HPNP Building, **Room G112**

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Instructor Names: Benjamin Anderson, MPH, PhD, CPH  
Phone Numbers: 352-273-9572  
Email Addresses: [ander88@ufl.edu](mailto:ander88@ufl.edu)  
Office hours: Wednesdays 4 PM – 5PM

Preferred Course Communications: The “Inbox” in Canvas will be used for all email correspondence. Instructor will not be responsible for emails sent to “UFL” email address.

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**Prerequisites:**

PHC6313: Environmental Health Concepts in Public Health

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**PURPOSE AND OUTCOME**

**Course Overview**

Exposure to hazardous chemical, physical and biological agents occur through inhalation, ingestion, or contact with a variety of environmental media including air, water, food, or soil. Students will acquire and apply the key knowledge needed to perform environmental monitoring for exposure assessment in environmental health research and practice.

**Course Description**

Methods to measure and estimate exposure to hazardous agents encountered in the environment are explored in this course. Students will learn how to apply exposure measurement and exposure assessment methods through a variety of problem sets and exercises provided throughout this course.

**Course Objectives and/or Goals**

After completing this course, students should be able to:

1. Understand the role of exposure science in public health practice
2. Develop exposure assessment strategies for health risk assessment
3. Develop exposure assessment strategies for epidemiological studies
4. Critically evaluate the scientific literature on exposure science
5. Select and apply the appropriate techniques to measure or estimate exposure
6. Understand the limitations of exposure data collection techniques
7. Present the results of your exposure estimates effectively, in written and oral form

**Relation to Program and Learning Outcomes**

Competencies primarily gained in this course

1. Describe to specific communities or general populations the direct and indirect human and ecological effects of major environmental agents.
2. Develop testable hypotheses and models to evaluate biological and chemical environmental exposures.

3. Communicate effectively with constituencies in oral and written forms.

### **Instructional Methods**

1. Lectures: 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.
2. Readings and Resources. In addition to the required text, supplementary readings and resources will be posted in the course. The reading list may be supplemented during the course.
3. Assessments: The primary assessments will be class participation, written assignments, quizzes, and a mid-term and final examination.

### **What is expected of you?**

You are expected to attend bi-weekly lectures and complete all readings, assignments, and exams. Additionally, you are expected to actively engage in the course throughout the semester. Your participation fosters a rich experience for you and your peers that facilitate overall mastery of the course objectives.

### **DESCRIPTION OF COURSE CONTENT**

This course is taught as a series of modules, each covering one specific aspect of environmental exposure assessment and environmental monitoring. Each module may contain lectures, external links, videos, discussions and required readings as well as assignments. Lectures will be given by a variety of individuals with expertise in specific topical areas (e.g., biological agents in water) related to environmental monitoring and exposure assessment. You are responsible for all course content regardless of the format or lecturer. The topical Outline/Course Schedule below details the dates of content modules and assignments. Assignments and Exams are also listed.

### **Getting Started Online**

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 PHC6702-Exposure Assessment
3. Complete the "Getting Started" Module under the Modules Tool (left menu). This will prompt you to download and review the syllabus and review the materials on plagiarism.

### **Course Materials and Technology**

Textbook (Required): **Exposure Assessment in Environmental Epidemiology, Second Edition by Mark J. Nieuwenhuijsen. Oxford University Press, Jun 2015, ISBN-13: 9780199378784**

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 PHC6702 - Exposure Assessment.

Here, I will post the syllabus, lecture slides, and assignments. You will also turn in assignments through this site. Once the course begins, course announcements will often take place through the e-Learning in Canvas site. This includes all emails. 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 by e-mail.

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

- [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu)
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

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## **ACADEMIC REQUIREMENTS AND GRADING**

### **General information**

Assignments are to be turned in as a Word document or PowerPoint file as directed, unless otherwise indicated. They will be returned to you with comments. If you have unexpected issues with Canvas, you may email the assignment to the instructor directly. Assignments are individual projects and 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). Also please confirm that your work is not overtly plagiarized, the Turnitin system will give you a report. Some similarity is expected and unavoidable, however if large portions are copied from other sources, this will be 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 to correct file.

You will be graded in the course through assigned work such as a written assignment, presentations, and exams/quizzes.

### **Course Requirements/Evaluation/Grading**

Students will be evaluated by their Topical Student Presentations (15%), quizzes (25%), midterm examination (20%), final examination (20%), and a 6–10-page term paper and presentation on a topic related to the course approved by the instructor (20%).

#### **Topical Student Presentations (15%)**

Each student will give two presentations periodically throughout the semester (see course schedule for presentation timeline – each student will sign up for two of the four scheduled options). Detailed instructions and a grading rubric will be provided on Canvas. For this assignment, each presentation will be 10 minutes with 5 minutes of discussion/Q&A after the presentation. The student will identify a study from the peer-reviewed literature related to one of the module topics noted in the course schedule and will provide rationale for selecting the study, the study background, a detailed summary of the methods used, study results, primary conclusions, and limitations.

#### **Quizzes (25%)**

Students are expected to complete 4 quizzes that are taken periodically throughout the semester (see course schedule for timeline of quizzes). Each quiz will be online using Canvas and will be timed with 3 hours for each quiz. Quizzes will assess your knowledge of course content throughout the semester and serves to prepare you for the midterm and final exams. The number of questions on each quiz will vary based on the content covered for each specific quiz.

#### **Term Paper and Presentation (20%)**

A 6-10 page paper (double-spaced) on a specific exposure assessment question of interest to the student is due at the end of the course. The paper must include a description of the environmental exposure problem (1-page minimum), a formal review of scientific literature (3-pages minimum) related to the

exposure scenario and exposure measurement and assessment methods, and a description of the exposure assessment design including methods used and justification for the study design (2-pages minimum). Students are strongly advised to select a topic whose knowledge is of use to their academic or professional goals (e.g. internship). The topic title is due by the date posted on the course schedule and a list of references and an outline are due approximately two weeks later (see Course Schedule). The paper must be submitted through Turnitin®. In addition to the written report, students are expected to produce a 5-minute presentation given in front of the class along with a two-minute question and answer session. The presentation should clearly and succinctly summarize their review of the literature and should demonstrate that the student has a working knowledge of the topic. The term paper will account for 75% and the presentation will account for 25% of the final grade for this assignment. Earlier requests for feedback from the instructor are encouraged.

### Midterm Exam (20%) and Final Exam (20%)

**There will be two take-home class exams: a midterm and a final.** The format for both exams will be **take-home** and **opened book**. The midterm exam will test your knowledge of the first series of modules; including material covered in lectures and assigned readings. The final exam will focus on material covered in modules from the midterm onward; however, as this material builds on concepts presented during the first half of the course, it will be imperative to have a good comprehension of material covered during the first part of the course.

### Grading

Requirement	Percentage of Total Points	Due date
Topical Student Presentations	15%	See Course Schedule (variable)
Quizzes	25%	See Course Schedule (variable)
Term Paper and Presentation	20%	See Course Schedule (variable)
Midterm Exam	20%	March 1, 2024
Final Exam	20%	April 24, 2023

Point system used (i.e., how do course points translate into letter grades).

<b>Points earned</b>	93-100%	90-92%	87-89%	83-86%	80-82%	77-79%	73-76%	70-72%	67-69%	63-66%	60-62%	Below 62%
<b>Letter Grade</b>	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E

### Passing grades and Grade Points: Credit Earned

Passing Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
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

Please be aware that letter grades of C-, D+, D, D- or E are not considered passing at the graduate level, although the grade points associated with these letter grades are included in grade point average calculations. 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.

For more detail on the meaning of letter grades and university policies related to them, see the Registrar's Grade Policy regulations at:

<http://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

#### Policy Related to Make up Exams or Other Work

Assignments turned in up to 24 hours late (from 11:59PM of the day the assignment was due) will be discounted **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 your final grade unless arrangements have been made in advance with the instructor. Missed assignments will contribute zero points toward your 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 if you have sufficient documentation.

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

Please note all faculty are bound by the UF policy for excused absences. 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

#### Expectations Regarding Course Behavior

You are expected to maintain a civil tone and respect the opinions of other persons. 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 required to contact the professor 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://gradschool.ufl.edu/students/introduction.html>

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 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. 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 feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

### **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>

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## **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.

### **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](http://www.multicultural.ufl.edu)

### **Topical Outline and Course Schedule:**

<b>Week</b>	<b>Modul No.</b>	<b>Module Title</b>	<b>Date</b>	<b>Readings*, Textbook, Quizzes</b>
<i>*Additional assigned readings will be posted on Canvas and will not be listed on this course schedule</i>				
<b>Unit 1: Fundamentals of Environmental Monitoring and Exposure Assessment</b>				
<b>Week 1</b>	1	Course Introduction	Jan. 8	Syllabus
	2	Introduction to Environmental Monitoring and Exposure Assessment	Jan 10	Assigned Reading (see Canvas)
<b>Holiday (MLK day) – No Class Monday, January 15, 2024</b>				
<b>Week 2</b>	3	A Survival Guide to Exposure Metrics, Variability, and Uncertainty	Jan 17	Chapter 1, 10
<b>Week 3</b>	SP1	Topical Student Presentations #1: Wild Card	Jan 22	No Assigned Readings
	4	Questionnaires	Jan 24	Chapter 2 <b>Quiz 1</b>
<b>Unit 2: Environmental Monitoring and Assessment of Exposure Pathways</b>				
<b>Week 4</b>	5	Environmental Measurement of Air Contaminants: Particulate Matter and Gasses	Jan 29	Chapter 11, 12
	6	Environmental Measurement of Air Contaminants: Bioaerosols	Jan 31	Chapter 11



Week	Modul No.	Module Title	Date	Readings*, Textbook, Quizzes
Week 5	7	Environmental Measurement and Exposure Assessment of Water Contaminants: Biologic Agents and Chemicals	Feb 5	Chapter 11, 16
	--	Article Critique	Feb 7	Assigned Reading (see Canvas)
Week 6	8	Dermal and Inadvertent Ingestion Exposure Assessment	Feb 12	Chapter 9
	9	Environmental Measurement of Soil Contaminants: Chemicals	Feb 14	Quiz 2
Week 7	SP2	Topical Student Presentations #2: Modules 5-9	Feb 19	No Assigned Readings
	--	Writing a Term Paper	Feb 21	N/A
Week 8	--	Midterm Review Session	Feb 26	N/A
	--	Class Canceled (Online Midterm)	Mar 1	N/A
ME – Midterm Exam Released on Feb 27 (Due by Mar 1 <sup>st</sup> )				
Week 9	10	Personal Exposure Monitoring	Mar 4	Chapters 5
	11	Biological Monitoring	Mar 6	Chapters 6, 17
Holiday (Spring Break) – No Class March 11-18, 2024				
Week 10	SP3	Topical Student Presentations #3: Modules 10 & 11	Mar 18	No Assigned Readings
	12	Assessment of the Exposome	Mar 20	Chapter 14 Quiz 3
Unit 3: Modeling Approaches in Exposure Science				
Week 11	13	Exposure Assessment using Geographic Information Systems	Mar 25	Chapter 3
	14	Modeling for Air Pollution Exposure Assessment	Mar 27	Chapter 4, 13
Week 12	15	Modeling Chemical Exposure from Food Consumption	Apr 1	Assigned Reading
	16	Pharmacokinetic Modeling	Apr 3	Chapter 8 Quiz 4
Week 13	SP4	Topical Student Presentations #4: Modules 12-15	Apr 8	No Assigned Reading
	17	Exposure Assessment for Occupational Health and Safety	Apr 10	Chapter 7
Week 14	--	Term Paper Student Presentations	Apr 15	--
	--	Final Exam Review Session	Apr 17	Term Papers Due
Week 15	FE	FINAL EXAM Released on Apr 18	Apr 24	--

