

University of Florida
College of Public Health & Health Professions Syllabus
PHC 7738C: Physiologically Based Pharmacokinetic Modeling in Toxicology and Risk Assessment (3 credit hours)
Semester: Fall 2023
Delivery Format: Online e-learning in Canvas

Instructor Name: Zhoumeng Lin, BMed, PhD, DABT, CPH

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Office Hours: Friday, 2:00 pm to 3:00 pm

Office Location: HPNP, Room 4156

Co-Instructor: Wei-Chun Chou, PhD, Building 471, Room 4, w.chou@ufl.edu

Teaching Assistant: to be named

Preferred Course Communications (e.g., email, office phone): Discussion Board on Canvas and Office hours (in-person and/or via Zoom)

Prerequisites

- One semester of pharmacokinetics (e.g., PHA 6125 or PHA 6131), toxicology (e.g., PHC 6304) or with permission from the instructor
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PURPOSE AND OUTCOME

Course Overview

This course will discuss the fundamental principles, software, methodology and applications of physiologically based pharmacokinetic (PBPK) modeling in toxicology and human health risk assessment of environmental chemicals. Students will also learn how to integrate machine learning and artificial intelligence approaches with PBPK modeling to support PBPK model development and applications.

Relation to Program Outcomes

This course fits to the programs of study in Environmental Health, One Health, and Toxicology. Competencies primarily gained in this course

1. Correlate environmental exposure to chemicals with internal exposure in the target organ of humans
2. Describe the absorption, distribution, metabolism, and excretion (ADME) of environmental chemicals in the body
3. Extrapolate pharmacokinetic and toxicity data of environmental chemicals from animals to humans
4. Apply a PBPK model for a drug in food animals to perform animal-derived food safety assessment
5. Apply a PBPK model for an environmental chemical to perform human health risk assessment
6. Generate PBPK simulation data to interpret toxicology findings of environmental pollutants
7. Describe how to integrate machine learning and artificial intelligence approaches with PBPK modeling to support PBPK model development and applications
8. Effectively present PBPK research results in oral and written forms

Course Objectives and/or Goals

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

1. Discriminate between classic pharmacokinetic modeling and physiologically based pharmacokinetic (PBPK) modeling
2. Design appropriate PBPK model structures for different environmental chemicals and drugs for different research scenarios and questions

3. Develop a PBPK model for a selected chemical in animals or humans
4. Perform PBPK simulations and analyses on different software platforms
5. Prescribe evaluation methods for different PBPK models for different chemicals with different research scenarios and questions
6. Perform human health risk assessment using a PBPK model for a selected environmental chemical
7. Prescribe and recognize appropriate machine learning and artificial intelligence methods to support development and application of a PBPK model

Instructional Methods

The instructional methods will include lectures, hands-on computer lab exercises, and online discussion board, reading materials, and various assessments, as well as a weekly announcement.

1. Lectures are pre-recorded. Once a module is posted, the module's lectures will be available throughout the semester. Lectures are the main source of content in this course.
2. Computer lab exercises will demonstrate how to develop a PK or PBPK model or how to perform a PBPK analysis. These demos will be recorded.
3. Online discussion board through Canvas is the main instructional method for the instructors, teaching assistant, and students to interact in this course. Students are expected to post their course questions to the Discussion Board and to check the Discussion Board at least twice per week. The instructors or the teaching assistant will check the Discussion Board daily and typically reply to course questions within 24 hours.
4. Reading materials include required readings and supplementary readings, which will be provided and clearly explained in the Overview document of each module.
5. This course will include several assessment methods, including weekly quizzes, lab assignments, discussions (e.g., active participation and weekly reflects), and course projects. Each student will design a PBPK course project and work on it throughout the semester with advice from the instructors and teaching assistant.
6. The weekly announcement will summarize the course activities of prior week and bring your attention to course activities of the current week.

What is expected of you?

A new Module will be posted each week except mid-term and final exam weeks, and students are expected to read the assigned textbook chapter(s), articles, and/or supplementary materials, watch the posted lectures, complete the quizzes/assignment, which are typically due by 11:59 pm Sunday of the week. Students are required to design a PBPK project and work on the course project with advice from the instructors and teaching assistant. Students are expected to actively participate in the online discussion board and engage in the course throughout the semester. Your participation fosters a rich course experience for you and your peers that facilitates overall mastery of the course objectives.

DESCRIPTION OF COURSE CONTENT

Topical Outline/Course Schedule

Week	Date(s)	Topic(s)	Readings
1	08/23/23- 08/27/23	<ul style="list-style-type: none"> Course overview Introduction and History of PBPK Modeling <p>Scheduled Lectures:</p> <ol style="list-style-type: none"> Course description and expectation Introduction of PBPK modeling History of PBPK modeling PBPK modeling – history and background (Dr. Melvin Andersen) 	<p>Chapter 1: A history and recent efforts of selected PBPK modeling topics</p> <p>Chapter 2: Introduction to classical pharmacokinetics</p>
2	08/28/23- 09/03/23	<ul style="list-style-type: none"> PBPK Modeling Software <p>Scheduled Lectures:</p> <ol style="list-style-type: none"> PBPK modeling software Introduction of Berkeley Madonna R program and PBPK modeling A one-compartment model in R language 	Chapter 4: PBPK modeling software
3	09/04/23- 09/10/23	<ul style="list-style-type: none"> Model Structure and Parameters <p>Scheduled Lectures:</p> <ol style="list-style-type: none"> PBPK model structure Physiological parameters in a PBPK model Chemical-specific parameters in a PBPK model Development of a Simple 2-Compartment Model A Two-Compartment Model in R Language 	<p>Chapter 3: Fundamentals of PBPK modeling</p> <p>Chapter 6 from Peters (2021)</p> <p>OECD (2021)</p>
4	09/11/23- 09/17/23	<ul style="list-style-type: none"> Course Project Introduction and Proposal <p>Scheduled Lectures:</p> <ol style="list-style-type: none"> Select your interested PBPK modeling project (Students can pick their projects or seek advice from the instructors) Objective, significance, novelty, feasibility, and justifiability Design, Discuss and Decide a PBPK Project Development of a simple PBPK model using Berkeley Madonna A simple PBPK model in R language 	Lin et al. (2015)
5	09/18/23- 09/24/23	<ul style="list-style-type: none"> Mathematical Description of Absorption <p>Scheduled Lectures:</p> <ol style="list-style-type: none"> Model development - mathematical description of absorption Pharmacokinetic data search - Part 1 Pharmacokinetic data search - Part 2 Development of a 7-compartment PBPK model A 7-compartment PBPK model in R language 	Chapter 5: Chemical absorption and writing code for portals of entry

Week	Date(s)	Topic(s)	Readings
6	09/25/23-10/01/23	<ul style="list-style-type: none"> Mathematical Description of Distribution Scheduled Lectures: <ol style="list-style-type: none"> Model development - mathematical description of distribution - chemicals Model development - mathematical description of distribution - nanomaterials Pharmacokinetic data extraction Development of a membrane-limited PBPK model A membrane-limited PBPK model in R language 	Chapter 6: PBPK model: distribution processes
7	10/02/23-10/08/23	<ul style="list-style-type: none"> Mathematical Description of Metabolism Scheduled Lectures: <ol style="list-style-type: none"> Model development – mathematical description of metabolism PBPK modeling of metabolites – some examples (Dr. Andersen) Development of an intramuscular injection PBPK model An intramuscular injection PBPK model in R language 	Chapter 7: Metabolism and PBPK models
8	10/09/23-10/15/23	<ul style="list-style-type: none"> Mathematical Description of Excretion Scheduled Lectures: <ol style="list-style-type: none"> Excretion pathways Model development - Mathematical description of renal excretion Model development - Mathematical description of biliary excretion Development of a multiroute PBPK model A multiroute PBPK model in R language 	Chapter 8: PBPK model: excretion via urine, feces, and breath
9	10/16/23-10/22/23	<ul style="list-style-type: none"> Allometric Scaling Scheduled Lectures: <ol style="list-style-type: none"> What is with the scaling (Dr. Jeffrey Fisher) Allometric scaling - traditional PK parameters Allometric scaling - PBPK parameters Allometric scaling - coding examples 	Huang et al. (2015) Brown et al. (1997) EPA (2011)
10	10/23/23-10/29/23	<ul style="list-style-type: none"> Review of Modules 1-9 and Mid-term Exam Scheduled Lectures: <ol style="list-style-type: none"> Learning the lingo (Dr. Fisher) Slowly and richly perfused tissue PBPK model debugging <p><i>(This will be in the format of student project progress report presentations)</i></p>	Mid-term Student Project Presentations

Week	Date(s)	Topic(s)	Readings
11	10/30/23- 11/05/23	<ul style="list-style-type: none"> Model Calibration and Evaluation Scheduled Lectures: <ol style="list-style-type: none"> PBPK model calibration and parameterization PBPK model evaluation PBPK model performance assessment Parameter optimization in R using FME package Development of a PBPK model for PFOS in mice, rats, monkeys, and humans (Dr. Wei-Chun Chou) 	Chapter 10: PBPK model calibration, evaluation, and performance assessment
12	11/06/23- 11/12/23	<ul style="list-style-type: none"> Sensitivity, uncertainty, and variability analyses Scheduled Lectures: <ol style="list-style-type: none"> Sensitivity analysis Uncertainty and variability analysis Markov chain Monte Carlo (MCMC) simulation in R using the FME package A population PBPK model for penicillin G in R program MCMC analysis of the PBPK model for PFOS in mice, rats, monkeys, and humans (Dr. Wei-Chun Chou) 	Chapter 9: Sensitivity and Monte Carlo analysis techniques and their use in uncertainty, variability, and population analysis
13	11/13/23- 11/19/23	<ul style="list-style-type: none"> PBPK Modeling with Commercial Software (GastroPlus) <i>(Students will be provided access to GastroPlus)</i> Scheduled Lectures: <ol style="list-style-type: none"> Basics of GastroPlus before using it for PBPK modeling Using GastroPlus to predict tissue to plasma partition coefficients How to build up a PBPK model from chemical structures in GastroPlus Demonstrations of Modules in GastroPlus - Part 1 Demonstrations of Modules in GastroPlus - Part 2 	Chapter 4: PBPK modeling software

Week	Date(s)	Topic(s)	Readings
14	11/20/23- 11/26/23	<ul style="list-style-type: none"> Advanced Topics: IVIVE, Pediatric Modeling, Gestational and Lactational PBPK Modeling, BBDR, and Probabilistic Risk Assessment <p>Scheduled Lectures:</p> <ol style="list-style-type: none"> In Vitro to In Vivo Extrapolation (IVIVE) Advances in pediatric modelling - Part 1 (Dr. Jeffrey Fisher) Advances in pediatric modelling - Part 2 (Dr. Jeffrey Fisher) Advances in pediatric modelling - Part 3 (Dr. Jeffrey Fisher) Biologically Based Dose Response (BBDR) modeling for the Lactating Mother – Using biologically motivated models for thyroid hormone production and hypothyroxinemia (Dr. Jeffrey Fisher) Probabilistic risk assessment using by integrating a PBPK model with high-throughput in vitro, animal in vivo toxicity, and human epidemiological data: PFOS as a case study (Dr. Wei-Chun Chou) 	<p>Chapter 12: PBPK models to support modernized chemical safety assessment</p> <p>Chou and Lin (2020)</p>
15	11/27/23- 12/03/23	<ul style="list-style-type: none"> Machine learning and artificial intelligence in PBPK modeling <p>Scheduled Lectures:</p> <ol style="list-style-type: none"> Overview on the roles of machine learning and artificial intelligence in toxicological sciences Overview on the roles of machine learning and artificial intelligence in PBPK modeling Examples on the use of machine learning and artificial intelligence to support PBPK model development Examples on the use of machine learning and artificial intelligence to support PBPK model applications 	<p>Lin and Chou (2022)</p> <p>Chou and Lin (2022)</p> <p>Kamiya et al. (2021)</p> <p>Li et al. (2021)</p> <p>Lin et al. (2022)</p>

Week	Date(s)	Topic(s)	Readings
16	12/04/23-12/10/23	<ul style="list-style-type: none"> • PBPK Model Application in Risk Assessment • Future Perspective <p>Scheduled Lectures:</p> <ol style="list-style-type: none"> 1. Overview of Risk Assessment, Derivation of Toxicity Values, and the Role of PBPK Models (Dr. Robert DeWoskin) 2. Examples of PBPK Models in Noncancer and Cancer Risk Assessment (Dr. Robert DeWoskin) 3. Non-cancer risk assessment using TCA PBPK model (Dr. Raymond Yang) 4. Cancer risk assessment using DCM PBPK model - Part 1 (Dr. Raymond Yang) 5. Dichloromethane cancer risk assessment - Part 2A (Dr. Raymond Yang) 6. Dichloromethane cancer risk assessment - Part 2B (Dr. Raymond Yang) 7. Dichloromethane cancer risk assessment - Part 3 (Dr. Raymond Yang) 8. PBPK and Cancer Risk Assessment (Dr. Melvin Andersen) 9. Future Perspective - PBPK modeling of polypharmacy (Dr. Raymond Yang) 10. 	<p>Chapter 11: Examples of PBPK modeling applied to risk assessment</p> <p>Article: Tan et al. (2018)</p>
17	12/11/23	<ul style="list-style-type: none"> • Final Exam (<i>This will be in the format of student project final report presentations</i>) 	Final Student Project Presentations

Getting Started

1. Visit <https://elearning.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 PHC 7738C: Physiologically Based Pharmacokinetic Modeling in Toxicology and Risk Assessment, Fall 2023.

Course Materials and Technology

Full citation of the required textbook: "Physiologically Based Pharmacokinetic (PBPK) Modeling – Methods and Applications in Toxicology and Risk Assessment" by Jeffrey W. Fisher, Jeffery M. Gearhart, and Zhoumeng Lin. (2020). Elsevier, Inc. Pages: 1-346. Students can have access to the PDF version of this book through UF Library (free of cost).

Other reading materials are mostly peer-reviewed journal articles and will be posted in Canvas. Full citations of relevant articles.

- Brown RP, Delp MD, Lindstedt SL, Rhomberg LR, Beliles RP. 1997. Physiological parameter values for physiologically based pharmacokinetic models. *Toxicol Ind Health*. 13(4):407-484.
- Chou WC, Lin Z. 2019. Bayesian evaluation of a physiologically based pharmacokinetic (PBPK) model for perfluorooctane sulfonate (PFOS) to characterize the interspecies uncertainty between mice, rats, monkeys, and humans: Development and performance verification. *Environ Int*. 129:408-422.
- Chou WC, Lin Z. 2020. Probabilistic human health risk assessment of perfluorooctane sulfonate (PFOS) by integrating in vitro, in vivo toxicity, and human epidemiological studies using a Bayesian-based dose-response assessment coupled with physiologically based pharmacokinetic (PBPK) modeling approach. *Environ Int*. 137:105581.

- Huang Q, Riviere JE. 2014. The application of allometric scaling principles to predict pharmacokinetic parameters across species. *Expert Opin Drug Metab Toxicol.* 10(9):1241-1253.
- Kamiya Y, Handa K, Miura T, Yanagi M, Shigeta K, Hina S, Shimizu M, Kitajima M, Shono F, Funatsu K et al. 2021. In Silico Prediction of Input Parameters for Simplified Physiologically Based Pharmacokinetic Models for Estimating Plasma, Liver, and Kidney Exposures in Rats after Oral Doses of 246 Disparate Chemicals. *Chem Res Toxicol.* 34(2):507-513.
- Li M, Gehring R, Riviere JE, Lin Z. 2017. Development and application of a population physiologically based pharmacokinetic model for penicillin G in swine and cattle for food safety assessment. *Food Chem Toxicol.* 107(Pt A):74-87.
- Lin Z, Gehring R, Mochel JP, Lave T, Riviere JE. 2016. Mathematical modeling and simulation in animal health - Part II: principles, methods, applications, and value of physiologically based pharmacokinetic modeling in veterinary medicine and food safety assessment. *J Vet Pharmacol Ther.* 39(5):421-438.
- Lin Z, Jaberi-Douraki M, He C, Jin S, Yang RSH, Fisher JW, Riviere JE. 2017. Performance Assessment and Translation of Physiologically Based Pharmacokinetic Models From acsIX to Berkeley Madonna, MATLAB, and R Language: Oxytetracycline and Gold Nanoparticles As Case Examples. *Toxicol Sci.* 158(1):23-35.
- Lin Z, Li M, Gehring R, Riviere JE. 2015. Development and application of a multiroute physiologically based pharmacokinetic model for oxytetracycline in dogs and humans. *J Pharm Sci.* 104(1):233-243.
- Tan YM, Worley RR, Leonard JA, Fisher JW. 2018. Challenges Associated With Applying Physiologically Based Pharmacokinetic Modeling for Public Health Decision-Making. *Toxicol Sci.* 162(2):341-348.

Required Software and Hardware: Access to a computer or a laptop with reliable internet access, a microphone headset, and a webcam, as well as with the PBPK modeling software RStudio and Berkeley Madonna installed. The free version of RStudio is sufficient for this course. Regarding Berkeley Madonna, the free trial version is sufficient for this course. However, if a student wants to use Berkeley Madonna for his/her research project, he or she may purchase the license. The Berkeley Madonna license may cost \$49-\$299/each license depending on the student's professional status and whether or not ordering as a group. This is a perpetual license. Thus, the license fee is a one-time fee only and you can use this software for your modeling needs henceforth. 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://elearning.ufl.edu/> and go to course site for PHC 7738C: Physiologically Based Pharmacokinetic Modeling in Toxicology and Risk Assessment, Fall 2023. Here, I will post the syllabus, lecture presentations, assignments, etc. The Canvas Discussion Board is recommended for discussions/chats amongst the students, instructor(s), guest lecturer(s), and teaching assistant(s). You will also turn in assignments through this Canvas site. Once the course begins, all communications will take place during class time or through the e-Learning in Canvas site. All course-related announcements will be posted through Canvas (i.e., the Announcement Board). This will eliminate any issues with students not receiving announcements due to other technical problems. It will be your responsibility to check the Canvas 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 (Ms. Truly Hardemon).

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

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

Additional Academic Resources

[Career Connections Center](#): Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

[Library Support](#): Various ways to receive assistance with respect to using the libraries or finding resources.

[Teaching Center](#): Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

[Writing Studio](#): 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: [Visit the Student Honor Code and Student Conduct Code webpage for more information.](#)

On-Line Students Complaints: [View the Distance Learning Student Complaint Process.](#)

ACADEMIC REQUIREMENTS AND GRADING

Learning assessment methods: Students will be graded with the following four learning assessment methods:

1. **Course project (200 points, 40% of total points, due at 11:59 pm EST on 10/23/23 for the mid-term presentation and at 11:59 pm EST on 12/11/23 for the final presentation):** Each student will design a PBPK modeling project carefully with proper justification at the beginning of the course. Students will work with the instructor and teaching assistants on their selected projects with inputs from fellow students and/or guest lecturers throughout the semester. Students are required to present their project progress in the mid-term exam and final exam. Students will submit their model code files and PowerPoint presentation files to the Canvas site. Each presentation will be recorded with video either on or off and uploaded in video format to Canvas so that other students will be able to view and provide comments.

The presentation should include title, outline, background, significance, novelty, objective, model structure, data collection/sources, parameterization process, and preliminary simulation results (e.g., calibration, evaluation results, or sensitivity analysis, or others). Since student projects are all different, each presentation may not include all components, but it should have the majority of these components. Depending on how students organize their files, the length of the presentation files should be between 10 and 15 slides (10-15 min). The midterm exam is due at 11:59 pm EST on October 23, 2023, and the final exam is due at 11:59 pm EST on December 11, 2023.

2. **Weekly Quizzes (75 points, 15% of total points, due at 11:59 pm EST the Sunday of the week):** There are weekly quizzes to test how well students understand the theoretical aspects of the course contents. Each weekly quiz will consist of 5 single-choice or multiple-choice questions and will account for 5 points. In total, the weekly quizzes will account for 75 points for 15 weeks. The weekly quizzes are due at 11:59 pm EST the Sunday of the week.
3. **Lab assignments (150 points, 30% of total points, due at 11:59 pm EST the Sunday of the week):** Each week, there will be one recorded lecture demonstrating how to develop a PK or PBPK model or to perform a PBPK analysis. This will be followed by a related lab assignment for the week. A detailed

description of each lab assignment requirements will be posted along with the week's Module to Canvas at the beginning of the week. Each lab assignment accounts for 10 points. In total, there will be 150 points for a total of 15 lab assignments. The weekly lab assignments are due at 11:59 pm EST the Sunday of the week.

4. **Discussion board (75 points, 15% of total points, due at 11:59 pm EST the Sunday of the week):** For an online course, the Discussion Board is an important component for students to interact with each other and with the instructor and teaching assistants. If you have a question about the course content and materials, you are probably not alone. Please share your question with your fellow students, the instructor, teaching assistants, and guest lecturers by posting it in the Discussion Board. At the beginning of each week, the instructor will post a weekly discussion topic. After students complete the lectures and reading materials, they are required to participate in the Discussion Board to sharing their thoughts on the topic. This Discussion Board assignment is a good opportunity for students to reflect what they have learned each week. Participation in Discussion Board will account for 5 points each week, with a total of 75 points for 15 weeks. The due date is 11:59 pm EST the Sunday of the week.

General requirements

Students are required to submit their assignments to Canvas. For the Discussion Board assignment, students are required to post their comments to the Discussion Board under the Discussion topic for the week. For the quiz, once students answer all question, please click the Submit button. For the lab assignments, mid-term exam and final exam, please submit your assignments as a Word document, PowerPoint document, or a .mmd or a .r file as appropriate through the Canvas Assignment upload. Once submitted, you will see a confirmation message indicating "assignment submitted". It is the student's responsibility to confirm that they turn in assignments on time with the correct assignment attachment and in the correct file format. Please be sure to open your submitted attachment and confirm that you have submitted the correct file. All grading rubrics, additional assignment instructions and requirements, will be posted on Canvas for each specific assignment. Although class attendance will not directly affect your final grade for this course, students are strongly encouraged to attend and participate in synchronous course activities because attendance and participation will help student's success in this course. The mid-term and final project progress presentations are anticipated to take place as a synchronous session via Zoom.

Grading

Requirement	Due date	Points	% of final grade (% must sum to 100%)
Discussion board	Sunday of the week	75	15
Weekly Quizzes	Sunday of the week	75	15
Mid-term exam presentation	10/23/23	100	20
Weekly lab assignments	Sunday of the week	150	30
Final exam presentation	12/11/23	100	20
Total		500	100

Total Points Earned	Percentage Earned	Letter Grade
≥465	93-100	A
450-464	90-92	A-
435-449	87-89	B+
415-434	83-86	B
400-414	80-82	B-
385-399	77-79	C+
365-384	73-76	C
350-364	70-72	C-
335-349	67-69	D+
315-334	63-66	D
300-314	60-62	D-
<300	Below 60	E

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

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

More information on UF grading policy may be found at:

<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades>

Exam Policy: There are no exams in this course.

Policy Related to Late Assignment and Make up Work

Assignments turned into Canvas up to 24 hours late will be discounted by 10% of the total points of the assignment. For example, if an assignment is worth 10 points and the assignment is submitted 12 hours late,

then the grade would be penalized by lowering the score by 1 point. Assignments turned in more than 24 hours late will not be graded and will contribute zero points toward your total points, unless arrangements have been made and approved in advance by the instructor. Missed assignments will contribute zero points toward your final points.

Special Circumstances. In the event of exceptional circumstances that may interfere with your ability to complete an assignment or meet a deadline, please contact the instructor as soon as possible before the deadline. Such special cases will be dealt on an individual basis, provided that you have sufficient documentation.

Please note: Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS or from UF Computing 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 me within 24 hours of the technical difficulty if you wish to request a make-up.

Policy Related to Required Class Attendance

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

It is the responsibility of the student to provide prior notification to the course instructor, through email, about any possible matter that could prevent attendance to a synchronous course session or that might require a student to arrive late or leave early for a synchronous course session.

Students enrolled in the INT section of this course are required to have a physical presence on campus. All students enrolled in the INT section will be required to come to campus to complete specific in-person activities. These in-person activities are integral to the completion of the class. Students in this section will come to campus and complete the mid-term and final exams in person. I will contact you one week before the exams to arrange the time and location.

STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT

Expectations Regarding Course Behavior

To allow for orderly learning and communication, students should follow the rules of online courtesy, including refraining from use of sexist, racist, off-color, or demeaning language or behavior, sometimes referred to as flaming. This is a college course, and student vocabulary and word choice should be appropriate to a college classroom. Students will stay on-topic, handling non-class related matters over off-line posts. The instructor will delete any inappropriate posts. The Netiquette Guidelines from the University of Florida are available here: <https://teach.ufl.edu/resource-library/onlinehybrid-course-creation/>

Communication Guidelines

If you have a question about the course content and materials, you are probably not alone. Please share your question with your fellow students, the instructor, teaching assistants, and guest lecturers by posting it in the Discussion Board. Students are highly encouraged to participate in the Discussion Board by posting a new question/topic and/or by commenting on other students' questions. Students are also encouraged to look through previous Discussions to see if anyone else has already asked a related question. The instructor and teaching assistants will monitor the discussion board daily and try to answer questions within 24 hours.

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.

Recording Within the Course:

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

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>

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/>.

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.

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.
- **U 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>
- **University Police Department:** [Visit UF Police Department website](#) or call 352-392-1111 (or 9-1-1 for emergencies).
- **UF Health Shands Emergency Room / Trauma Center:** For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; [Visit the UF Health Emergency Room and Trauma Center website.](#)

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