SYLLABUS
ENVENG 5195/PUBHEHS 5395
Engineering Design for Environmental Health

COURSE OVERVIEW

Instructor

Instructor: Karen Dannemiller

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Office hours: See syllabus online

Course description

Students in this course will learn how to incorporate health information into the engineering design process. This material complements risk assessment by focusing on the design of engineering systems. We will discuss balancing financial, health, performance, and other considerations. Quantitative analysis will be conducted in soil, water, air, buildings, and occupational health scenarios. Health information will be discussed including exposure, dose, and statistical analysis. We will also cover interdisciplinary team work and communication. This course will include a field trip to a campus building as well as a design project.

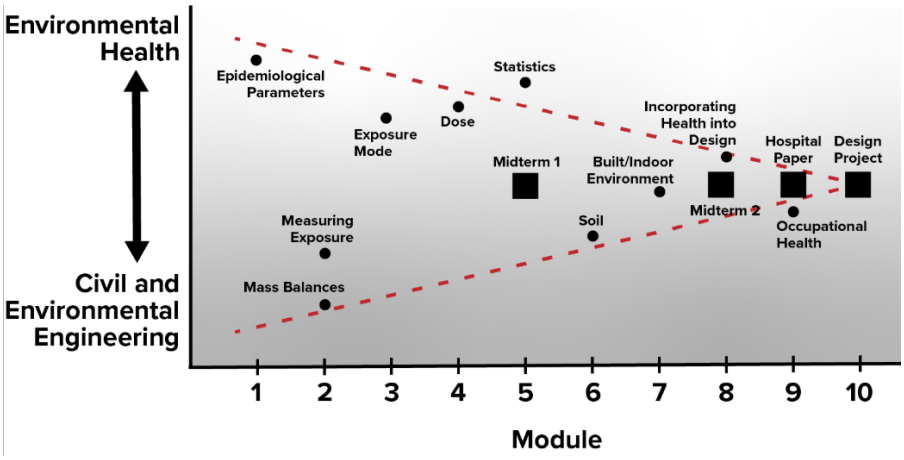
Prerequisites

Math 1151 or 1161.01 or 1161.02, or equivalent. Prerequisite of Chem 1210, or 1250 or equivalent. Enrollment in the CIVILEN or ENVENG or PUBHLTH-BS, Environmental Public Health program, or graduate standing, or permission of the instructor.

Course learning outcomes

By the end of this course, students should successfully be able to:

Course Goals	Learning Objectives
Discuss the impact of design choices on human health	Incorporate health constraints into the design process
	Quantify the health impact of design decisions
	Calculate and explain the meaning of odds ratios, relative risk, sensitivity, specificity, QALY, DALY
Conduct quantitative analysis in various media (soil, water, air) and specialties (building design, occupational health)	Calculate the health impact associated with design decisions in soil, water, air, building design, and occupational health
	Define typical exposures and exposure routes associated with soil, water, air, building design, and occupational health
Work on interdisciplinary teams to accomplish a common goal	Communicate (written) in an effective and quantitative way to people outside your discipline
	Contribute skills and your own knowledge to an interdisciplinary project in a team setting
Apply design skills in complex systems	Design a complex system
	Justify your design decisions and explain the balance between financial, health, performance, and other factors



COURSE MATERIALS AND TECHNOLOGIES

Textbooks

REQUIRED

- Quantitative Environmental Risk Analysis for Human Health, by Robert A. Fjeld, Norman A. Eisenberg, Keith L. Compton, ISBN: 978-0-471-72243-4; *Available online through Ohio State University Libraries*

There are also additional required readings posted throughout the course.

Course technology

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at https://ocio.osu.edu/help/hours, and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** http://ocio.osu.edu/selfservice
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

BASELINE TECHNICAL SKILLS FOR ONLINE COURSES

- Use an Internet browser – Chrome preferred
- View videos in Mediasite, YouTube and other locations
- Use Carmen (Canvas)
- Download, save, and open files
- View PDFs
- Use copy, cut and paste, find functions
- Send and receive e-mail messages with attachments within Carmen
- Use a word processing program (Microsoft Word preferred. Files are in .docx)
- Run and switch between multiple programs
- Create and share multi-media objects such as video or audio files

REQUIRED EQUIPMENT

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection.
- Calculator

- Chrome Browser – Recommended

SOFTWARE

- **Required**: CONTAM (a free software download; setup and installation will be covered in the course)
- Virtual desktop may need to be set up for students without access to a PC to use CONTAM for the homework and design project. Please contact the instructor during the first week of class if you only have access to another system such as Apple.
- **Required**: Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Full instructions for downloading and installation can be found https://ocio.osu.edu/kb04733.

CARMEN ACCESS

You will need to use BuckeyePass multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and IT support staff will work out a solution with you.

Health and safety requirements

All students, faculty and staff are required to comply with and stay up to date on all university safety and health guidance (https://safeandhealthy.osu.edu). Non-compliance will be warned first and disciplinary actions will be taken for repeated offenses.

Use of AI software

Given the learning goals of this class, in this course, students are welcome to explore innovative tools and technologies for **data analysis or presentation design**, including generative artificial intelligence (GenAI). Students are permitted to use GenAI tools for most course assignments**, except for producing direct written text, calculating answers to equation questions, or providing answers to multiple choice, fill-in-the-blank, or**

matching questions. Your written assignments, including your discussion posts, in-class submissions, and final design project, should be your own original work.

GenAI can be a helpful resource for brainstorming ideas, creating a "reverse outline" from a rough draft, and enhancing productivity. Yet it is essential to approach its use thoughtfully and ethically. If you use GenAI for any of your assignments, please include the following statement with each assignment:

1. **Application Used:** Specify the GenAI application or tool you used (e.g., Copilot, ChatGPT, Claude AI, Gemini).
2. **Intended Purpose:** Describe the purpose for which you used GenAI (e.g., idea generation, content creation).
3. **Quality of Initial GenAI Output:** Evaluate the initial output generated by GenAI. For example, was it accurate, biased, coherent, and/or relevant?
4. **Iteration and Refinement:** Explain how you revised prompts or adjusted parameters to refine the GenAI output. Did you experiment with different input prompts to improve the output?
5. **Incorporation in Completed Assignment:** Reflect on how you incorporated the GenAI-generated content into your assignment. How did you edit, adapt, or combine it with other ideas?

While GenAI can be a valuable tool, academic integrity remains paramount. You are responsible for developing and articulating your own ideas, so addressing how GenAI contributed to those ideas (as you would for any sources you use) is centrally important to your learning. Attribute GenAI-generated content with proper citations and avoid plagiarism. Additionally, consider the accuracy of information incorporated in your assignment and the ethical implications of using GenAI in educational contexts. You are responsible for ensuring that the information you submit based on a GenAI query does not contain misinformation, unethical content, or violate intellectual property laws.

If I suspect that you have used GenAI on an assignment for which it is prohibited, I will ask you to explain your process for completing the assignment in question and also ensure that your understanding of the topic is consistent with your response. I retain the right to ask you about your thought process and conduct an interview to ensure that your understanding of the material aligns with what you submitted. I may also randomly select submissions for interviews to ensure that your submissions align with your understanding. Submission of GenAI-generated content as your own original work is considered a violation of Ohio State's Academic Integrity(opens in new window) policy and Code of Student Conduct(opens in new window) because the work is not your own. The unauthorized use of GenAI tools will result in referral to the Committee on Academic Misconduct(opens in new window).

Privacy Considerations

Students should familiarize themselves with the Office of Technology and Digital Innovation's Security and Privacy Statement on Artificial Intelligence(opens in new window) and the Terms of Use for the GenAI service they use, as well as the service's expectations around data privacy and use. Students should not share private or sensitive information about themselves or others with GenAI services. In accordance with the *Security and Privacy Statement on Artificial Intelligence,* members of the university community should

not enter institutional data above the S1, or public, level into unvetted AI tools. See a list of university-approved AI tools(opens in new window), which includes Microsoft Copilot.

HOW THIS COURSE WORKS

Mode of delivery: Most students will take the in-person version of this course that meets twice a week in class. Students in the MGEL program will take a version that is 100% online and asynchronous. There are no required sessions when you must be logged in to Carmen at a scheduled time.

Class Format: This course will consist of readings, lectures, self-checks, homeworks, exams, and application assignments.

Please note: if you are taking the online version, online does not mean self-study. Students are expected to log-in regularly to the course site and interact with your peers through the class discussion boards and on group assignments. Please note that the course is structured in a way where you need to complete the tasks in order. For instance, you will need to complete readings and lectures before the homework is available to you. Please plan accordingly.

Pace of online activities: This course is divided into **weekly modules**. Students are expected to keep pace with weekly deadlines but may schedule their efforts freely within that time frame for each module. Materials submitted late will be subject to the late policy (see below).

Credit hours and work expectations: This is a **3-credit-hour course**. According to Ohio State policy, students should expect around 3 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to 6 hours of homework (reading and assignment preparation, for example) to receive a grade of (C) average. Therefore, in this class you can expect to spend ***a minimum of 9 hours per week of effort to pass.*** You may need to spend more time to earn a higher grade. Each Module has time requirements that are specified on the overview page. Ensure that you pace yourself so that you can complete all material before the deadline. Note that some modules might involve intermediate deadlines.

Expectations of Students: Students are expected to regularly attend and participate in class. However, sometimes you will get sick or have an unavoidable conflict. In that case, you can view the lectures online.

For students completing the online version, this is a completely asynchronous online course (i.e., there are no times at which we all gather together in person or virtually). The

asynchronous design allows for more flexibility, but it also puts ***more responsibility on you to effectively manage your time and learning***. As in a 'standard' face-to-face course, you are expected to keep up with the material and complete assignments throughout the semester. You should plan to spend a minimum of 9 hours each week on this course to pass and to log-in multiple times per week to the site on Carmen. You may need to spend more time on the course to earn a higher grade. These expectations are further discussed later in other sections of this syllabus.

Attendance and participation requirements: Students completing the in-person version of the course are expected to attend class regularly. For students in the online course, your attendance is based on your online activity and participation. The following is a summary of everyone's expected participation:

- **Participating in online activities for attendance**: **AT LEAST ONCE PER WEEK**
  You are expected to log in to the course in Carmen every week. (During most weeks you will probably log in many times.) If you have a situation that might cause you to miss an entire week of class, discuss it with me *as soon as possible.*

- **Office hours**: **OPTIONAL**
  All live, scheduled events for the course, including my office hours, are optional.

- **Participating in discussion forums**: **2+ TIMES PER WEEK**
  As part of your participation, each week you can expect to post at least twice as part of our substantive class discussion on the week's topics.

- **Field Trip**
  You are required to attend the in-person field trip (see schedule below). Missing the field trip will result in a 1 letter grade reduction. Mark this date on your calendar today.

- **Midterm**
  You are required to attend the midterm date and take the exam in class.

Course Structure and Organization: This course is structured into 10 Modules. These modules are centered around key topics in the class. There are several topics included in each module. Modules last 1-2 weeks, and all start on Tuesdays and close at 11:59 pm on Monday, with some exceptions to accommodate university breaks, holidays, and the beginning/end of the semester. Please check the dates listed on Carmen for clarification. Note that most modules will have a "soft open" on the prior Thursday for students who want to work ahead, but you are not expected to begin the module until the prior module is complete.

Each Module begins with a Module Overview page that will introduce you to the topics and explain to you what you will be doing in the module and how the topics apply to this course.

There is also a detailed Module Roadmap for each module, listing the work that needs to be done with the estimated time it will take you to complete the work. **ALL WORK IN THE MODULES MUST BE DONE IN SEQUENTIAL ORDER.** For example, you cannot move on to the readings for the second topic until you have done all of the work for the first topic. If you are taking the in-person version of the class, you will be expected to click to open the lecture pages, but after opening you can move on.

When you are done with one item, use the NEXT button at the bottom right-hand corner of the page to progress through the course.

Each Module consists of multiple elements. **Elements must be completed in sequential order.** In each Module you will:

- Complete the readings/viewings
- View the lecture* videos (they are broken down into multiple parts for easier viewing AND Complete the self-checks that accompany each part. Lecture/Self-Checks can be found together in one link in the module called “LECTURES/SELF-CHECK.” You have unlimited attempts, but you must score at least 90% to progress to the next topic.
- Complete the Homework assignment for that Module. There is one per module. You have unlimited attempts until the due date and can also view helpful information on the “hints” page.
- Some modules will have a Quiz and/or Exam. These are all open book/open notes and you can access other course materials during the exams. You cannot access the internet or other people.
- Please note that major course assignments can be previewed by scrolling to the bottom of the module page on Carmen.

Knowledge-check quiz

In order to help you prepare for the course we have created this a knowledge-check quiz in the **pre-course module.** You have unlimited attempts at the pre-course quiz. This quiz will not count towards your final grade**. You need to attempt the quiz once in order to progress through the modules in this course.** You do not need to earn a certain score - you only need to attempt it once.

This module was created to provide you with resources you can use to review fundamental math concepts you will need to have mastered and be comfortable using and applying in this course.

This module contains:

- Links to biology review materials.
- Pre-course quiz

It is strongly suggested that if you do not get 90% on this practice quiz that you go back and review the materials and take the quiz again. I cannot emphasize enough - *if you do not have a solid understanding of these concepts you will not be successful in this course.*

There is also a required quiz about the information contained in the syllabus that must be passed with at least the score indicated.

These are **required quizzes. You must complete them and meet all the conditions in the "Welcome Module" to access any other content in this course.**

GRADING AND FACULTY RESPONSE

How your grade is calculated

ASSIGNMENT CATEGORY	POINTS
Participation – Self checks and discussion posts	5
Attendance/TopHat Questions	15
Homework	20
Midterm 1	20
Paper and peer review	10
Design project pre-assignment	3
Design project memo	2
Design project cost estimate	5
Design project	20

Classmate Connection Discussion Posts	0.5 (bonus)
Total	**100**

See course schedule, below, for due dates.

Partial credit

Partial credit will normally not be awarded for homework problems (except in cases of long written answers). Partial credit may be considered on exams, the paper, and the design project.

Late assignments

Late assignments will be accepted with 5% of available points subtracted from your score per day late down to 70% total credit. You MUST email the professor when you have turned in an assignment late or it may not be graded. The late policy will apply to all assignment types. Acceptance of late assignments outside this policy will require justifiable exceptional/extreme circumstances (such as a medical emergency). Procrastination is not a justifiable reason, and it is recommended that you use this course to further develop your time-management skills. Assignments can always be submitted early.

However, for homework, there is an optional homework in an extra optional module that will be available towards the end of the semester that can be used to replace an existing assignment. Completing that homework can replace another homework grade (**EXCEPT FOR HOMEWORK 2**). All homework assignments are expected to be completed and reviewed by you (whether or not scores are dropped), which will help you on the exam and projects. Generally, partial credit will *not* be awarded for homework problems, but solutions will be posted a week after the deadline.

Grading scale

93–100: A
90–92.9: A-
87–89.9: B+
83–86.9: B
80–82.9: B-
77–79.9: C+
73–76.9: C
70 –72.9: C-
67 –69.9: D+

60 –66.9: D
Below 60: E

Faculty feedback and response time

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-HELP** at any time if you have a technical problem.)

- **Grading and feedback:** For large weekly assignments, you can generally expect feedback within **7-14 days**.
- **E-mail:** I will reply to e-mails within **48 hours on school days**. If you have not heard back in this time, please resend your message.

Assignments

Readings/Viewings

As noted in the Modules and Topic Structure Table at the end of this document, there are multiple topics in each module. For each topic you will read/view the related materials. These materials will provide you with information related to the topic and help prepare you for the lecture/videos that follow.

Lecture/Self-Checks

Concepts taught in this course will be presented to you in lectures that have been divided into short segments. Students in the online class will watch recorded lectures and students in the in-person class will participate in lectures live. You will watch the lectures and then answer the self-check questions (directly below the lectures in the modules) to check for understanding. You have unlimited attempts at the self-checks, but you must answer at least all but one question in order to progress to the next page in the module. These self-checks will contribute to the participation component of your final grade, so you may want to try for 100%. You can review the lectures as many times as you would like, use your notes or readings to answer the self-check questions. These are entirely open-book/open-note. The goal of these checks is to make sure that you fully understand key concepts covered in the module. If you have questions about any of the content in the lecture or the self-checks, do not message me directly but rather post to the Questions about course content discussion board (See details about discussion boards in the next section called “The Pinned Discussion Boards.”)

Homework:

Each homework is due at time indicated on Carmen. Look at the due dates in the “Modules”

tab on Carmen and put them in your calendar now. **In fact, you can export the calendar in Carmen to sync with your personal calendar.** Homework assignments are submitted online in Carmen, and you can resubmit the assignment an unlimited number of times prior to the due date. You are encouraged to view which problems you missed, and then view the "hints" page to learn how to solve the problem. The system will keep your highest grade, but sometimes if you submit a new version late, your score could go down due to a bug in Carmen. If this is the case, please email the professor. You are encouraged to work together in pairs or groups on homework assignments, but copying is prohibited. You must turn in your own work. If you have questions about any of the content in the homework, do not message me directly but rather post to the Questions about course content discussion board (See details about discussion boards in the next section called "The Pinned Discussion Boards.")

Exams:
There will be one midterm. All exams are open book and open notes, and it is also recommended that you prepare a *handwritten* double-sided 8.5" x 11" sheet of paper of notes. This can be uploaded with your exam for additional bonus points. You may use any calculator without an internet connection and without messaging ability. You may NOT work with others on the exam. Accessing any other electronic device, talking, suspected copying, or similar activities during an exam will result in a referral to the University's Committee on Academic Misconduct (see below). Missing an exam will result in a zero for that portion of the grade unless prior permission of the instructor has been obtained at least two weeks in advance. Please mark these date in your calendar today!

Design Project:
A design project will be assigned. You will be designing the ventilation system in a building while also lowering expenditures. You can work in groups of 4-5. Please let the instructor know if you need help finding a group. You will be using the CONTAM software: http://www.nist.gov/el/building_environment/contam_software.cfm. An initial two page Memo will be due partway through the course to give an overview of your design plan. Additionally, a cost estimate will be due to detail your expected expenses for the design with about 50% of the design completed. The overall report will be due at the end of the course.

Hospital short paper and peer review:
You will be assigned to write a short paper describing a topic to readers outside your discipline. You will also provide peer reviews of the work of your classmates. You will be graded on both your original writing and the peer review you write for your classmate.

Field trip:
This course includes a field trip to a campus building. In the online class, the field trip has been filmed and can be viewed via video. If you are taking the in-person class, the field trip day

is REQUIRED to attend in-person. Missing the field trip will result in a 1 letter grade reduction. Please mark this date on your calendar today!

Class participation and TopHat questions for in-person students:
If you are taking the in-person version of the course, you are expected to attend and participate in the discussion at each class. Most classes will include interactive question(s) that you can answer using TopHat (tophat.com). Course code is on Carmen. Questions may cover the required reading prior to class or may require in-class calculations. Some questions will be completed alone and some in pairs/groups as indicated by the instructor. Please ensure that your TopHat account is activated by the second class. You will earn 0.5 points for answering and 0.5 points for a correct answer. This will contribute to the attendance component of your final grade. Answering for an absent student or answering when not present in class will be reported to COAM (see below). Everyone will get 2 "free points" in case you need to miss a class for a valid reason. Additional points for missed classes will not be awarded unless you have an emergency that causes you to miss 2 or more classes. If you miss a class you can not make up the TopHat question because they involve in-class discussions. Save these missed classes for illness or emergency and plan to attend every class.

PARTICIPATION AND ATTENDANCE

Student participation requirements

Class Participation:

If you are sick, do not come to class. While you are generally expected to attend class on a regular basis, everyone may get sick or have an unavoidable conflict. Please try not to miss more than two classes, but if you do we will arrange for you to make it up. You do not need to inform the instructor if you are only missing one or two classes, but please send an email if you need to miss more. If you miss a class, please watch the corresponding lecture online and complete the online material. Please pay attention to the **two required classes to attend (Midterm 1 and the field trip)**.

There will be additional opportunities for course participation throughout the course. This will include discussion boards about topics related to the class. These items will contribute to the participation component of your grade.

Students are ***required*** to subscribe to the announcements in the course to stay up to date. I will NOT send information via email.

Your participation grade will include your participation in discussions boards, the "Introduce yourself" board, and other opportunities throughout the course. There are also important opportunities for student-student interactions and student-instructor interactions:

Student-student interactions

- Rapport-building activities
  - “Introduce yourself” discussion board (participation grade)
  - “Classmate Connect” discussion boards at the ends of the modules (participation grade)
  - Student lounge pinned discussion board (open-discussion forum to encourage student interaction with peers)
- Instructional activities
  - Viewing/posting in discussion boards (participation grade)
  - Viewing module learning reflections from peers (participation grade)
  - Viewing and responding to peer posts on content discussion boards
  - Application assignment interactions with your groups and with peer-review

Student-instructor interactions

- Approximately weekly instructor announcements during each module
  - Course introduction and conclusion
  - Announcements with reminders and directions
  - Connection Announcements (intended to highlight connections between course content, activities, assignments, and real-world events)
- Interactions with instructor via discussion boards
  - “Introduce yourself” discussion board with instructor post and responses to students (participation grade)
  - Course content help and technical help discussion boards
- Instructor videos
  - Module introduction videos featuring instructor speaking directly to the students
  - Viewing course content, calculations examples, and lectures created by instructors
- Individual instructor interactions
  - Instructor reaching out to students who may be struggling after the first midterm and as-needed
  - Instructions on how students may access the instructor via various methods (Carmen message, Zoom) as needed
  - Weekly office hours via Zoom
- Grading feedback
  - Grading of assignments
  - Hints added to some self-check problems
  - Consultations as needed

The Pinned Discussion Boards

These boards will be accessible to you throughout the entire semester. ***It is the best way to communicate with me or other technical support staff if you have questions.*** If you ask questions to me via email that are intended for the discussion boards, I will only reply and ask

you to post there first. The boards are checked approximately daily, and it is your responsibility to ask questions with sufficient time before the due date for us to respond. The three discussion boards in the module, and their purposes, are as follows:

- **Questions about course content discussion board** Use this discussion board to ask questions about course policies and assignments. Likely, if you have a question about an assignment, or policy, others do as well. I will respond and provide clarification on the discussion board to ensure that everyone has access to the same information. I will not respond to questions about course content or policy via Canvas email. However, if you want to schedule an appointment with me or if you have a question about a grade, please send me a message via Canvas inbox so that we can find a time to meet and discuss. In addition, you are always encouraged to call/visit during office hours or make a separate appointment.

- **Technical Help discussion board** We have worked hard to get out all of the technological kinks in this course but occasionally issues related to Carmen and technology will occur. Post questions here that are related to technology issues specific to the course (example: a video won't load). You will receive a response from within 24 hours during school days. For more general technology questions (examples: Carmen won't load, or my email doesn't work), OSU maintains an IT Service Desk that provides 24-hour support, seven days a week, via email [8help@osu.edu], phone [614-688-HELP (4357)], or self-service chat [https://osuitsm.service- now.com/selfservice/]. To check on the status of an entire system (i.e., Carmen) look at the OCIO System Status page [https://osuitsm.service-now.com/selfservice/system_status.do]

- **Student Lounge: Free-form discussion board** In a face-to-face class, it's easy to engage in off-topic discussions. When you walk into the classroom you can chat with the person next to you about last night's football game, discuss the latest movies, or talk about your favorite music or upcoming concert. This type of engagement is extracurricular, but it can help build relationships that are advantageous inside the classroom. In an online course it's just as important, if not more so, to have a risk-free environment for sharing and connecting with your classmates. In this class, we have created a discussion board labeled "Student Lounge: Free Form Discussion". This discussion space is entirely for student use. Please remember to be respectful in this forum and maintain proper netiquette. I encourage you to use this space to get to know one another. Since this is your area, I will not monitor or even visit the lounge.

The following is a summary of everyone's expected participation:

- **Logging in**: **MULTIPLE TIMES PER WEEK**
  Be sure you are logging in to the course in Carmen each week multiple times, including at least once early in the week (or the previous week) to go over the materials and activities and plan a schedule for completing them. If you have a situation that might cause you to miss an entire week of class, discuss it with me *as soon as possible.*
- **Office hours**: **OPTIONAL**
  Scheduled office hours (see schedule above) are optional. If you need to discuss an assignment with me and need a time outside my scheduled office hours, please contact me at the beginning of the week.
- **In-person students**: Attend class regularly.

Discussion and communication guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style**: While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics.
- **Tone and civility**: Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online.
- **Citing your sources**: When we have academic discussions, please cite your sources to back up what you say. (For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.)
- **Backing up your work**: Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.

OTHER COURSE POLICIES

Academic integrity policy

POLICIES FOR THIS ONLINE COURSE

- **Quizzes and exams**: You must complete the midterm and final exams yourself, without any external help or communication. Weekly quizzes are included as self-checks without points attached.
- **Written assignments**: Your written assignments, including discussion posts, should be your own original work. In formal assignments, you should follow an academic style (of your choice) to cite the ideas and words of your research sources. You are encouraged

to ask a trusted person to proofread your assignments before you turn them in--but no one else should revise or rewrite your work.

- **Reusing past work**: In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with me.
- **Falsifying research or results**: All research you will conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your library research look more successful than it was.
- **Collaboration and informal peer-review**: The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of major written projects is encouraged, remember that comparing answers on a quiz or assignment is not permitted. If you're unsure about a particular situation, please feel free just to ask ahead of time.
- **Group projects**: This course includes group projects, which can be stressful for students when it comes to dividing work, taking credit, and receiving grades and feedback. I have attempted to make the guidelines for group work as clear as possible for each activity and assignment, but please let me know if you have any questions.

OHIO STATE'S ACADEMIC INTEGRITY POLICY

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's *Code of Student Conduct* is never considered an "excuse" for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's *Code of Student*

Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages (COAM Home)
- *Ten Suggestions for Preserving Academic Integrity (Ten Suggestions)*
- *Eight Cardinal Rules of Academic Integrity* (www.northwestern.edu/uacc/8cards.htm)

Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Statement on Title IX

All students and employees at Ohio State have the right to work and learn in an environment free from harassment and discrimination based on sex or gender, and the university can arrange interim measures, provide support resources, and explain investigation options, including referral to confidential resources.

If you or someone you know has been harassed or discriminated against based on your sex or gender, including sexual harassment, sexual assault, relationship violence, stalking, or sexual exploitation, you may find information about your rights and options at titleix.osu.edu or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu. Title IX is part of the Office of Institutional Equity (OIE) at Ohio State, which responds to all bias-motivated incidents of harassment and discrimination, such as race, religion, national origin and disability. For more information on OIE, visit equity.osu.edu or email equity@osu.edu.

Your mental health

A recent American College Health Survey found stress, sleep problems, anxiety, depression, interpersonal concerns, death of a significant other and alcohol use among the top ten health

impediments to academic performance. Students experiencing personal problems or situational crises during the quarter are encouraged to contact OSU Counseling and Consultation Services (614-292-5766) for assistance, support and advocacy. Your college may also offer specific services. This service is free and confidential.

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you find yourself feeling isolated, anxious or overwhelmed, please know that there are resources to help: ccs.osu.edu. You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Prevention Hotline at 1-(800)-273-TALK or at suicidepreventionlifeline.org. The Ohio State Wellness app is also a great resource available at go.osu.edu/wellnessapp.

Student Emergency Financial Support

The **Student Advocacy Center** staff members are continuing to serve students during normal business hours and are accepting online appointments.

The **Student Emergency Fund** is available to students who may otherwise be at risk of dropping out of college due to an unexpected financial emergency. If you, or a student you know, are experiencing an unplanned expense, the Student Emergency Fund may be an option. Their office is accepting applications and may be able to award up to $1,000 to eligible students. **Learn more and apply**.

The Together As Buckeyes emergency grants program, funded primarily by the federal Coronavirus Aid, Relief and Economic Security (CARES) Act, is available to all students — undergraduate, graduate and professional — through the Student Financial Aid office. To apply for a grant, students need to complete a one-page Emergency Request form and provide any supporting documentation. The Office of Student Financial Aid will process applications after determining eligibility based on each student’s circumstances and guidance from the U.S. Department of Education.

Franklin County Department of Job and Family Services has amended its Prevention, Retention and Contingency Program to provide targeted relief for families impacted by the COVID-19 pandemic. The Franklin County COVID-19 Response PRC Program provides eligible families with $500 in one-time cash assistance to help address emergent needs and expenses brought about by the public health emergency. Families can apply online today.

The **Student Wellness Center** offers financial coaching through the Scarlet and Gray Financial nationally recognized peer financial coaching program. Through the program, students will learn about financial goal setting, banking basics, budgeting, credit education, debt repayment education and saving and retirement education. Learn more.

Child Care

The Office of Diversity and Inclusion provides holistic support for qualifying student parents enrolled at Ohio State. To learn more, contact the "Child Care Access Means Parents in School" (CCAMPIS) Program at 614-247-7092/ lewis.40@osu or visit **odi.osu.edu/ccampis**

Food Assistance

It's a common idea that pervades American culture: when you're in college, it's simply a rite of passage to sustain yourself on cheap, unhealthy food. We disagree. We highly recommend OSU's **Buckeye Food Alliance** Lincoln Tower 150 food pantry (https://www.buckeyefoodalliance.org) and the MidOhio Foodbank (https://www.midohiofoodbank.org). The **Buckeye Food Alliance** will remain open to support students in need. Starting Monday, March 23 the pantry will be open Monday/Thursday 10 a.m. – 2 p.m.; Tuesday/Wednesday 4 – 8 p.m. and Friday 11 a.m. – 3 p.m. If these times do not work for your schedule, you can schedule a special appointment by contacting Nick Fowler at fowler.318@osu.edu.

Student Resources

Ensure that you are aware of student services and benefits available to you: https://online.osu.edu/student-services-benefits.

ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Requesting accommodations

If you would like to request academic accommodations based on the impact of a disability qualified under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, contact your instructor privately as soon as possible to discuss your specific needs. Discussions are confidential.

In addition to contacting the instructor, please contact the Student Life Disability Services at 614-292-3307 or ods@osu.edu to register for services and/or to coordinate any accommodations you might need in your courses at The Ohio State University.

Go to http://ods.osu.edu for more information.

Accessibility of course technology

This online course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- Carmen (Canvas) accessibility
- CONTAM software
- Streaming audio and video
- Synchronous course tools

ABET OUTCOMES AND PUBLIC HEALTH COMPETENCIES:

This course aligns with the following ABET outcomes:

- 1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- 2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- 3. an ability to communicate effectively with a range of audiences
- 4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- 5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

- 6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- 7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

This course aligns with the following BSPH Core Competencies:

- 3. Discuss various approaches/strategies for identification, response, and intervention to address and attempt to resolve common public health issues
- 4. Identify genetic, social, political, cultural, behavioral, socioeconomic, demographic, and ethical factors and relationships to domestic and international public health issues and determinants of health.

This course aligns with the following BSPH EPH Specialization Competencies:

- 1. Apply principles of math, chemistry, biology to applied science of environmental public health.
- 2. Summarize major sources, hazardous agents, conditions, and other exposure factors that contribute to environmentally-related human diseases.
- 3. Describe how the quality of environmental media (air, water, soil, food) are adversely affected by contamination from chemical, biological and physical agents.
- 4. Apply theory to environmental public health issues identified within indoor/outdoor and occupational/non-occupational settings.
- 5. Calculate, analyze and interpret fundamental statistical, epidemiological, and environmental monitoring/surveillance and risk assessment data.
- 6. Summarize management and technical measures and approaches that control human exposure to environmental contaminants.
- 8. Write and communicate applicable scientific and technical summaries.

This course aligns with the following MPH Core Competencies:

- 1. Apply appropriate descriptive and inferential statistical techniques to public health data and interpret results of statistical analyses in the context of public health research and evaluation;

- 2. Apply foundational principles of environmental health science to categorize sources and types of contaminants, matrices involved, pathways for and modes of exposure, associated health effects and societal issues, approaches to control, and major regulations;
- 3. Apply epidemiologic principles to investigate the distribution of risk factors and disease in the population to improve public health;
- 6. Demonstrate effective written and oral skills for communicating with different audiences in the context of professional public health activities;
- 8. Apply the core functions of assessment, policy development, and assurance in the analysis of global public health problems and their solutions;
- 10. Collaborate with multidisciplinary groups to recognize and evaluate public health issues and develop strategies for intervention.

This course aligns with the following MPH Environmental Health Specialization Competencies:

- 1. Explain the significance of the community and workplace environment to public health.
- 2. Outline the health threat that natural and anthropogenic contaminants in the environment can pose to population health.
- 3. Compare the fate, transport, and human uptake of chemical and biological agents.
- 4. Explain the physiological factors that influence human exposure and the uptake of chemical and biological environmental agents.
- 5. Critique and conduct human risk assessments.
- 6. Identify and explain individual (e.g., genetic, physiologic and psychosocial) and community (social, built, economic, race) susceptibility factors that heighten the risk for populations for adverse health outcomes from environmental hazards.
- 8. Use various risk management and risk communication approaches for environmental hazards.
- 13. Compare the principle components and influencing factors in the exposure continuum from source to disease.
- 14. Determine the role of exposure assessment in environmental and occupational health.

A complete list of College of Public Health Competencies are located in Appendix C of the CPH Graduate Student Handbook that can be found at: https://go.osu.edu/cphgradcompetencies

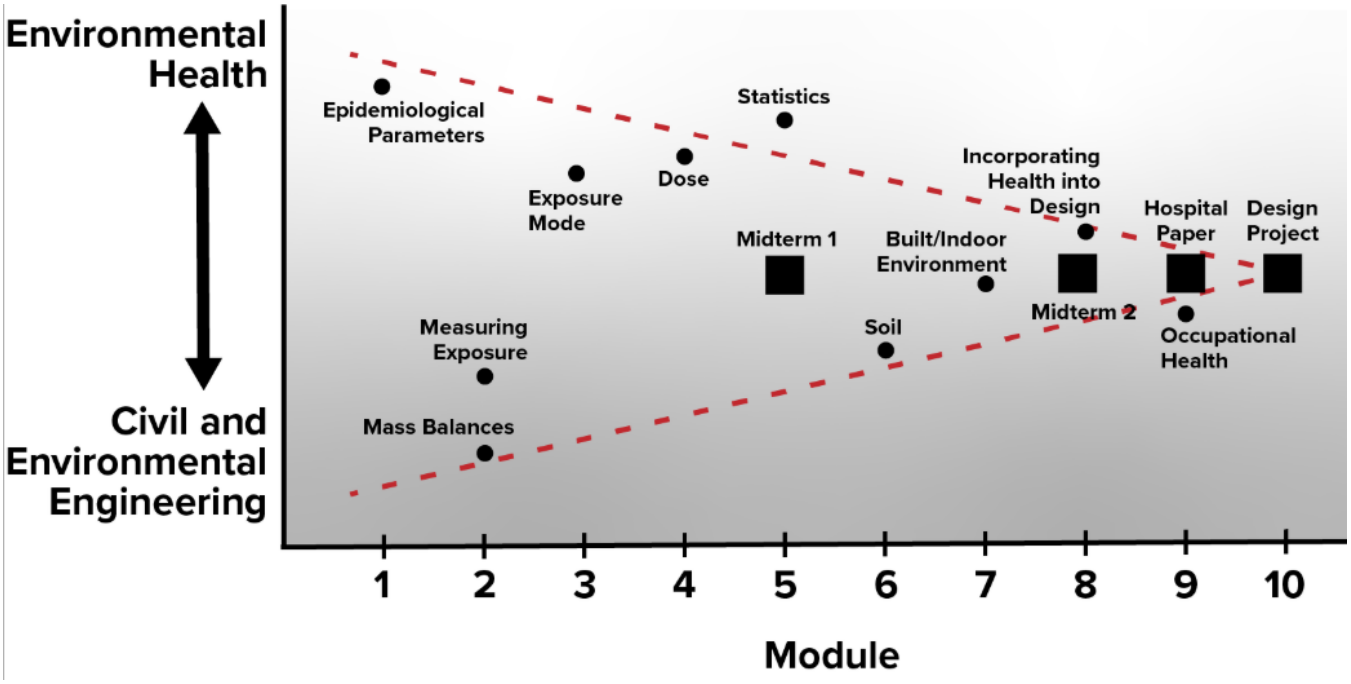
This course complies with the ESGP core course requirements as follows:

- It provides an understanding of physical structure and processes in which ecosystems must function.
  - This course includes mass balance models of contaminants and materials in the environment.
  - Equations from physical models are used to calculation contaminant concentrations in various media
- Physical structure includes soil, water, air, geological media, climate, nutrients, and contaminants.
  - This class covers soil, water, air, buildings, and occupational health scenarios.
- Physical science processes include movement of “abiotic” matter and energy through ecosystems.
  - Contaminant transport is modeled in soil, water, air, buildings, and occupational health scenarios.
  - We also consider biological contaminants.
  - We address topics such as contaminants of emerging concern.
- ESGP Core courses must
  1. Study fundamental physical, hydrological, chemical, or biogeochemical processes
     - This course covers mass balance models of contaminants moving in the environment.
     - We also model the human body as a one-compartment and two-compartment model.
  2. Study and emphasize the effects of physical structure and processes on ecosystem biotic components and function and the interactions between the biotic and abiotic components of the ecosystem.
     - This course integrates environmental health into engineering design.

- The design project utilizes a mass balance model to design a ventilation system in a room that influences environmental health of the occupants.
- Students must write a short paper advocating for a design component to integrate into hospital design. These components are then debated in class.

COURSE SCHEDULE

See detailed schedule on Carmen.



The following tables gives an approximate weekly timeline. Please check Carmen for specific dates and note that this is subject to change/adjustment. Carmen provides the most updated and accurate dates, so please follow Carmen over this approximate table.

Date	Topic
1/13	Course introduction, Epidemiology overview
1/15	Epidemiology
1/20	Epidemiology
1/22	Epidemiology
1/27	Mass balance review
1/29	Mass balance review

2/3	Measuring exposure: chemical
2/5	Measuring exposure: chemical
2/10	Measuring exposure: biological
2/12	Measuring exposure: biological
2/17	Exposure modes: inhalation, dermal
2/19	Exposure mode: ingestion
2/24	Dose
2/26	Dose
3/3	Statistics: Variability
3/5	Statistics: Uncertainty
3/10	Midterm Review
3/12	Midterm
3/17	NO CLASS: Spring break
3/19	NO CLASS: Spring break
3/24	Built Environment
3/26	Case study: Hospital design
3/31	Indoor/Outdoor Air Contaminant Control
4/2	Introduction to CONTAM software – Meet in Bolz computer lab 420
4/7	Incorporating health into design
4/9	Occupational Health

4/14	Discuss hospital papers in class
4/16	Building presentation, occupational health
4/21	Building field trip, Residence on 10th – REQUIRED, failure to attend results in a 1 letter grade reduction
4/23	Trip recap, Writing, Work on Project
Optional	Emerging concerns: nanoparticles, climate change
4/28	Design Project Due, 5pm; Last Day to submit any late materials