Term Information

Effective Term	Autumn 2022
Previous Value	*Autumn 2018*

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)

To submit the course for GE Theme approvals - Sustainability and Lived Environments.

To update the course topics listed in the curriculum portal

The course has been taught 100% DL since the pandemic and the DL cover sheet needs to be submitted (attached below)

What is the rationale for the proposed change(s)?

To submit the course for GE Theme approvals, to include the updated course topics and to indicate the course delivery mode

What are the programmatic implications of the proposed change(s)?

(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?

Is approval of the request contingent upon the approval of other course or curricular program request? No

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area	Pub Hlth: Envirmtl Hlth Scis
Fiscal Unit/Academic Org	College of Public Health - D2505
College/Academic Group	Public Health
Level/Career	Undergraduate
Course Number/Catalog	3310
Course Title	Current Issues in Global Environmental Health
Transcript Abbreviation	Issues Envir Hlth
Course Description	Fundamental concepts and principles of environmental health are presented through a critical review and discussion of current issues in global environmental health.
Semester Credit Hours/Units	Fixed: 3

Offering Information

Length Of Course	14 Week, 12 Week, 8 Week, 7 Week, 6 Week, 4 Week
Previous Value	*14 Week, 12 Week*
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	Yes
Is any section of the course offered	100% at a distance
Previous Value	*No*
Grading Basis	Letter Grade
Repeatable	No
Course Components	Lecture
Grade Roster Component	Lecture
Credit Available by Exam	No
Admission Condition Course	No

Off Campus   Never
Campus of Offering   Columbus, Lima, Mansfield, Marion, Newark, Wooster
Previous Value   *Columbus, Marion*

Prerequisites and Exclusions

Prerequisites/Corequisites
Exclusions
Electronically Enforced   No

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code   51.2202
Subsidy Level   Baccalaureate Course
Intended Rank   Sophomore, Junior, Senior

Requirement/Elective Designation

Required for this unit's degrees, majors, and/or minors
    Lived Environments; Sustainability
The course is an elective (for this or other units) or is a service course for other units

Previous Value

Required for this unit's degrees, majors, and/or minors
The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- Explain the definition of Environmental Health. Apply the One Health Environmental Health Science Model to describe diseases and outcomes related to environmental sources and agents
- Describe several major ways in which the environment and human health are linked in different parts of the world and for different populations
- Describe several ways by which scientific studies determine the quantitative relationship between environmental parameters and health
- Describe several ways by which the health impact from major environmental hazards can be effectively controlled.

Previous Value

- *Describe how the environment is defined*
- *Describe several major ways in which the environment and human health are linked in different parts of the world and for different populations*
- *Describe several ways by which scientific studies determine the quantitative relationship between environmental parameters and health*
- *Describe several ways by which the health impact from major environmental hazards can be effectively controlled.*

Content Topic List

- Introduction to Environmental Heath, the EHS model
  Ecology, Ecosystems, and Environmental Health: Effects of Growth on Ecosystems, Population Dynamics
- Environmental Epidemiology; Environmental Health Justice, Environmental Health Ethics, Environmental Toxicology, Toxic Substances, Food Quality, Food Security, Vector Borne Diseases and Pesticides, Zoonotic Diseases
- Air Quality, Noise Pollution and Health, Water Pollution and Health, Solid and Hazardous Waste Management, Healthy Homes, Communities, Social Determinants of Health, Indoor Air Quality
- Exposure Science Risk Assessment, Risk Communication, Trust and Mistrust in Science, Environmental Public Health from Theory to Practice, Sustainability and Environmental Health, Climate Change, Public Health, and Renewable Energy

Previous Value

- *The Global Burden of Disease-- Environmental Contributions*
- *Environmental Epidemiology; Environmental Toxicology*
- *Environmental Policy and Regulation; Exposure Assessment*
- *Chemicals in the Environment; Environment and Infectious Disease*
- *Risk Assessment; Radiation*
- *Midterm Exam; Exam Review/Water Quality*
- *Water Treatment and Sanitation; Case-Study: Environment and Schistosomiasis*
- *Air Quality; Food Safety*
- *Solid and Liquid Wastes; Occupational Health*
- *Global Environmental Change and Human Health I; Global Environmental Change and Human Health II*

Sought Concurrence   No

Attachments

- PUBHEHS 3310 submission sustainability.pdf: GE Theme submission: Sustainability
  (Other Supporting Documentation. Owner: Droesch,Kynthia Ellen)
- PUBHEHS 3310 submission-lived-environments.pdf: GE Theme submission: Lived Environments
  (Other Supporting Documentation. Owner: Droesch,Kynthia Ellen)
- PUBHEHS_3310_distance_approval_cover_sheet.pdf: Distance Approval Delivery
  (Other Supporting Documentation. Owner: Droesch,Kynthia Ellen)
- PUBHEHS 3310 Syllabus Curent Issues in Global Environmental Health.GE LE SUS.pdf: Revised syllabus that applies to both GE themes
  (Syllabus. Owner: Droesch,Kynthia Ellen)

Comments

- I removed the 2 syllabi and replaced them with 1 syllabus that applies to both GE themes.We confirmed w/Dr. Vankeerbergen that we do not need to submit the equivalent in person syllabus. *(by Droesch,Kynthia Ellen on 03/07/2022 04:45 PM)*
- As always, when requesting DL status, please remember to upload the equivalent in-person syllabus https://asccas.osu.edu/curriculum/distance-courses *(by Vankeerbergen,Bernadette Chantal on 03/01/2022 02:02 PM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Droesch,Kynthia Ellen	12/09/2021 10:23 AM	Submitted for Approval
Approved	Anderson,Sarah Elizabeth	12/09/2021 01:02 PM	Unit Approval
Approved	Bisesi,Michael Salvatore	12/20/2021 12:30 PM	College Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	02/13/2022 02:43 PM	ASCCAO Approval
Submitted	Droesch,Kynthia Ellen	02/16/2022 01:56 PM	Submitted for Approval
Approved	Anderson,Sarah Elizabeth	02/16/2022 02:29 PM	Unit Approval
Approved	Bisesi,Michael Salvatore	02/16/2022 03:27 PM	College Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	03/01/2022 02:02 PM	ASCCAO Approval
Submitted	Droesch,Kynthia Ellen	03/07/2022 04:46 PM	Submitted for Approval
Approved	Anderson,Sarah Elizabeth	03/07/2022 05:36 PM	Unit Approval
Approved	Bisesi,Michael Salvatore	03/07/2022 07:24 PM	College Approval
Pending Approval	Cody,Emily Kathryn Jenkins,Mary Ellen Bigler Hanlin,Deborah Kay Hilty,Michael Vankeerbergen,Bernadette Chantal Steele,Rachel Lea	03/07/2022 07:24 PM	ASCCAO Approval

PUBHEHS 3310 Current Issues in Global Environmental Health

Course Information

- **Credit hours:** 3 credit hours

- **Mode of delivery: Distance with Synchronous sessions**
  - Time: 9:10 am-10:05 am
  - Distance Learning Days: Monday (Synchronous), and Wednesday (Synchronous)
  - https://go.osu.edu/pubhehs3310

Instructor

- **Name:** Paul Rosile, MPH, PhD, MPH, R.E.H.S.

- **Virtual Office Hours**: Office hours are by appointment, go to:
  https://go.osu.edu/pubhehs3310

- **Preferred means of communication:**

  - For further details on contacting the Instructor and TA, see page 5Teaching Assistant (TA) Communication with Instructor and TA

- **Name:** Emily Lu

- **Virtual Office Hours**: Office hours are by appointment via zoom.

Course description

In 2016, 13.7 million people died (approx. size of **130** Ohio State Football Stadiums) died due to environmental factors according to the World Health Organization. This represents 24% of all deaths globally in 2016. This course is designed to introduce students to the *basic environmental factors and processes that impact the health and well-being of humans locally, regionally, and internationally.* To better understand these factors and processes, students will study some of the foundational concepts applied in Environmental Health Science (EHS), such as toxicology, epidemiology, the effect of ecosystems health on human heath, EH justice and ethics. We will focus our study on the social determinants of health (conditions in which people are born, grow, live, work and age). We will apply the One Health EHS Model (see Figure 1 at the end of this document) to understand the sources of EH hazards (chemical, physical, and biological agents in the environment that influence human health), the environmental pathways (such as air, food, water, soil and vector) through which these agents travel, and the routes of human exposure of these agents. We will also apply this model to our study of the health effects of these agents, personal and group response to these health effects, societal responses, and finally the environmental controls that are used to prevent the effects of EH hazards and risks. The methods of exposure science and assessment, risk communication and the development of EH policy will

be presented. Sustainability and resiliency will be discussed relative to energy use and climate change. At the conclusion of the course, a lecture on the practice of environmental health will illustrate how most, if not all, of the course topics are applied in practice.

The Course Schedule of Topics is available at the end of this document (see Table 1), and on the syllabus page in Carmen, and is **subject to change without prior notice. Please check regularly**

Course Text/Readings

There is a required textbook for this course: Our Global Environment, A Health Perspective 8th Edition by Anne Nadakavukaren and Jack Caravanos. Required readings from the text will be listed by chapter or page numbers.

All additional readings (articles, government web sites, etc.) or videos will be posted as a PDF or URL link at least two weeks before I expect to discuss them with you during class

To purchase/rent an etextbook:	If you want a hardcopy text:
• visit https://get.vitalsource.com/ • click on Student Store • type in ISBN 978-1-4786-3771-4 • The price to rent this textbook for 180 days is $32.48 USD.	• visit the Waveland Press website at http://waveland.com/browse.php?t=398 The price is $64.95 and free shipping. This is a 2020 edition and the most comprehensive and current Global Environmental Health textbook on the market.

Course Learning Outcomes

1. Explain the definition of Environmental Health
2. Apply the One Health Environmental Health Science Model to describe diseases and outcomes related to environmental sources and agents (See Figure 1)
3. Explain the relationship between population growth, ecosystem, and environmental health
4. Explain and apply the principles of environmental epidemiology to environmental health problems
5. Explain and apply toxicological principles to the practice of environmental health science
6. Explain the relationship between environmental ethics and environmental health
7. Explain the relationship between environmental justice and environmental health
8. Identify and explain the biological, chemical, and physical agents, gene/environment interactions, and the social determinants of health associated with environmentally related diseases and other health outcomes
9. Identify and explain the pathways, transmission factors, and exposure routes associated with environmentally related diseases and other health outcomes
10. Identify and explain the health effects and other health outcomes of the biological, chemical, and physical agents, gene/environment interactions, and the psychological and social determinants of health associated with environmentally related diseases
11. Identify, explain, and analyze the environmental controls that are implemented to mitigate these health hazards/risks/effects, from a local, regional, national, international, personal, and occupational context.
12. Explain the relationship between sustainability and environmental health
13. Explain the relationship between the principles of sustainability and resiliency to the quality and quantity of our food, water, air, energy, and land resources, from a local, regional, national, international, and personal context.
14. Apply and analyze practices of sustainability and resiliency used to preserve and protect the quality and quantity of our food, water, air, energy, and land resources, from a local, regional, national, international, and personal context.
15. Explain and interpret the scientific justification and proposed causes of climate change and global warming
16. Explain and analyze current climate change science and the proposed solutions to prevent, mitigate, and adapt to the effects of climate change and global warming
17. Describe how the use clean energy, and the implementation of resiliency and sustainability practices are related to the mitigation of climate change
18. Summarize the principles of exposure science and risk assessment applied in the practice of EHS from a personal, community, and occupational environmental public health perspective.
19. Explain the process and/or methods by which risk communication, environmental health advocacy, personal and societal responses to adverse health hazards/risks/effects and other health outcomes are applied to risk management, policy development, standard setting, and the implementation of environmental controls to mitigate these health hazards/risks/effects
20. Explain how geospatial data are used and interpreted in the practice of environmental health science
21. Analyze how the popular media represents and reports on environmental health science topics
22. Summarize the historical developments in environmental health science, epidemiology, and toxicology
23. Summarize the regulatory structure that is in place to protect environmental health from a local, regional, national, and international context
24. Describe and summarize the practice of environmental health as it applies to the topics and methods in this course in the private, government, and non-profit sector from a local, regional, national, and international context.
25. Identify potential employers of graduates from an accredited EHS program for entry level positions and/or the opportunities for advanced education and training in public health or a related discipline

Course Format – "Flipped Classroom"– Mondays and Wednesdays

Synchronous Sessions: "Flipped Classroom" Wednesdays & Mondays

As an instructor, one of the things I love most is helping students connect EHS (ENVIRONMENTAL HEALTH SCIENCE) concepts to their personal and professional lives. EHS is all around us and you have interacted with these topics in ways you may or may not have realized. I have strategically structured this course so that we can maximize our "together" time talking to each other and sharing our EHS experiences. The foundational concepts you need to participate in these conversations and make these connections can be found in recorded lectures (and other LEARNING MATERIAL) in the module. By putting these materials in the modules, you can review them, rewatch, stop, pause, take notes…at a pace that suites your learning. When we meet for the first time during our week, on Wednesdays, we can use that time to interact in real time.

This style of classroom structure is called a "flipped classroom" approach - this means that you will be watching recorded lectures and working through learning materials, online, at your own pace (within the structure of the week). Our class time together on Wednesdays and Mondays will be focused on completion of assignments - including Milestones for your larger group project- and other opportunities for engagement and interaction.

IMPORTANT NOTE: *Attendance and participation is required for all class sessions as is sharing your screen while in these meeting sessions (see Class Policies in syllabus for Attendance and Participation and Zoom Meetings.) Attendance and participation are defined as attending class in an environment that is not a distraction to learning or participation. An example of such a distraction would be, but not limited to, attempting to work at a place of employment while attending class.*

Mondays– Active Learning Days

By the time you arrive to our first virtual meeting you will have already viewed all the Learning Materials, video lectures, and taking all the Knowledge Checks for the week. We will start off the week with dialogue; an opportunity for me to provide clarification or re-teach concepts as well as share stories, cases and other materials that will help you develop a deeper understanding of the topics covered this week. We may even have some short learning activities during this class time together. These sessions will inform your Homework and Reflective Journal assignments which you will complete after this session.

You will all be required to post to the Questions, Clarification, Comments Discussion board for that module. Just as I would if I were in a physical classroom with you, I will ask direct questions to students. This means I may call on you during our synchronous session. This is not to test your knowledge or put you on the spot but a way for me to connect to you and to

foster peer-to-peer connections. Participation and attendance points may be lost if students are not prepared for classroom discussions.

When you come to Monday Active Learning Day your time will be spent as follows:
- **(5 minutes) Welcoming each other to the class/poll/ice breaker**

- Re-teaching, clarifying, connecting concepts taught this **week, helping you understand how they relate to EHS, your lives, our world, this course. I will use some of the following tools:**
  - **Case Studies**
  - **EHS in the news**
  - **Guest Speakers**
  - **Discussion questions and prompts and challenges**
  - **Anything else that comes to mind**

Wednesdays – Milestone Days

You will be completing a group project called "EHS Video Project" in this course. We have broken down the work for this project into "Milestones." You can also see a detailed project outline in the Assignments Overview Module in Canvas. Each milestone will have a clearly defined deliverable to work towards and due dates.

This does not eliminate the need to work with your group outs of Wednesday's class time, but you will use this built-in time slot each week to work and get feedback from me and your peers. An overview of the EHS Video Project can be seen below. Details of dates and Milestones can be found in your Canvas course. The last Monday session will be our "EHS Golden Globes." awards party.

Course Communication

Canvas
We will be using Canvas for all aspects of course management. Please check the course homepage on Canvas for course announcements, clarifications, and other class materials every time you log into the classroom to stay on top of the latest developments in the course. You are required to subscribe to "Announcements", which will notify you via email of a new posting.

Communication with Instructor and TA
We will not respond to questions about course content or policy via Canvas Inbox or osu.edu email. However, if you have a question about your grades or other academic problems you are having with the course, missing class, or problems you are having due to an illness, emergency, or a disability accommodation, please send me (Dr. Rosile) a message via Canvas inbox so that we can find a time to meet and discuss.
The General Course Policy and Assignments Discussion Board

This board will be accessible to you throughout the entire semester. Use this discussion board for questions about course policy or assignments. Likely, if you have a question about an assignment or policy, others do as well. The TA or I will respond and provide clarification on the discussion board to ensure that everyone has access to the same information.

Class Format

This course is 100% distance learning with synchronous class times. **Students will be required to attend virtual synchronous classes on Wednesdays and Mondays during the scheduled class time 9:10-10:05am.**

Weeks run Thursdays to Wednesdays and the modules will unlock (and become available) on Thursdays at 12:01am.

Our first synchronous meeting day of the week is Wednesday's synchronous session, and our weeks will end with our Monday synchronous session. A typical week looks like this (see Suggested Workflow Document in Module):

Thursday Module opens at 12:01 AM	Friday	Saturday	Sunday	MONDAY SYNCHRONOUS	Tuesday	WEDNESDAY SYNCHRONOUS
Work through Learning Materials and Knowledge Checks. Post to Discussion Board by Saturday at 11:59pm (Post required to get access to link to Syn session on MONDAY)				Attend Monday "Active Learning" synchronous session	Work on Homework (HW) and Reflective Journal (RJ)	Attend "Milestone Wednesday" Synchronous Session HW and RJs are due Wednesday at 11:59pm unless otherwise noted in the course. EHS Video Projects have specific dates. Pay close attention to course calendar and STUDENT PROJECT GUIDE

Technology and Tech Skills Needed to be Successful in this Course:

Minimum and recommended computer configurations

- To meet the requirements of commonly used software and to use the Internet effectively, your computer should meet the **MINIMUM hardware** requirements recommended by OSU's IT service desk
  - Device (computer, laptop, tablet) which meets [Ohio State's minimum requirements](#)
  - Stable high-speed internet access (DSL, cable, home or public Wi-Fi, eduroam)
  - Current versions of a web browser such as Mozilla Firefox or Google Chrome
- **Other:** a mobile device (smartphone or tablet) to use for BuckeyePass authentication

If you do not have access to the technology you need to succeed in this class, review options for technology and internet access at [go.osu.edu/student-tech-access](#).

Additional Required Hardware and Software

- **Calculator** - one that you understand how to use!!
- **Webcam:** built-in or external webcam, fully installed
- **Microphone**: built-in laptop or tablet mic or external microphone
- **iPad as distributed via OSU's Digital Flagship.** All incoming freshman for this and several previous years, are given iPads. If you do not have yours yet, contact [Students | Digital Flagship (osu.edu)](#)

Required Technical Skills
In this course, you will be expected to:

- Use an Internet browser –Chrome
- 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 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

- Use apps included in your OSU Digital Flagship iPad:
  - App list - https://digitalflagship.osu.edu/students/technology/app-list
  - Tutorials - https://digitalflagship.osu.edu/students/technology/app-tutorials
  - Resources - https://digitalflagship.osu.edu/students/resources

Top Tools Used in this Course
CarmenCanvas, CarmenZoom, and Microsoft Office 365 are the three main tools that will help you access your course material and stay connected with your Instructors and classmates. Learn more about all the tools at your disposal - Tools | Keep Learning (osu.edu)

Policies
Late Policy and make-ups
It is strongly encouraged that you plan to complete material in advance of the deadline. Students who are most successful in the class space out the material to ensure that there is sufficient time to absorb it. A "Suggested Workflow" document can be found in the Getting Started module. This also helps guard against the impact of unforeseen circumstances. There will be very few exceptions to the late policy. Managing your schedule and time is an important skill that will serve you well both in this course and in your future career. Late policy exceptions will only be granted under exceptional circumstances and extended emergencies with proper documented evidence. Delaying starting the material until a few hours prior to the deadline and then having insufficient time to complete it will not result in an extension. Some modules also have group work that needs to be completed by a certain deadline for your group to move forward. It is also recommended that you turn in materials on time to ensure that you stay on track with the course. Keep in mind that each module represents many hours of effort, which are clearly outlined in the overview page of each module.

If you miss the deadline for the weekly assignments/activities, self-checks, reflections, or any other assignments, make-ups will only be permitted for serious emergencies such as personal illness or death in the family. If so, you must contact the instructor before the deadline or event (or arrange for someone to do so) or as soon as possible. You must provide evidence that you are physically unable to participate, such as a doctor's note mentioning the date, exam, and reason for the absence. If such evidence is provided, then you may be excused and given the opportunity to submit your work within a timeframe acceptable to the instructor. No make-ups will be granted, including but not limited to personal reasons such as travel, personal hardship,

leisure, or to ease test week schedules. No student will be permitted to take an exam beyond the scheduled exam week. Exceptions may be made at the instructor's discretion. Failure to submit assignments by the due date and time will result in an automatic reduction of your score by 10% per day from the original grade. As always, unforeseen circumstances may cause the class deadlines to be changed. Any changes will be communicated in the "Announcements" page

Application to real world employment

For Accreditation of the BSPH Degree Program, the CPH needs to provide evidence that the overall undergraduate curriculum and public health major curriculum expose students to concepts and experiences necessary for success in the workplace, further education and lifelong learning. The course and its policies are designed to prepare you for real world employment. Workplace policies in the best organizations are enforced by its leadership to help create a healthy and productive environment. As in the workforce, there will be consequences for not following course policies, that are outlined in this syllabus. As you should hold me accountable to meet the educational requirements of the course, you will be held accountable for behavior that is your responsibility. In high functioning organizations, you will not have a large safety net to assist you when you are facing challenges. On the contrary, you will be expected to find a way to work through the obstacles to your success, or you won't survive in that organization. At the same time organizations need to be flexible enough to continuously improve and change course if necessary. Successful organizations hire employees with the following key success factors: communication, both verbal and written, collaboration, creativity, and flexibility. The skillsets that are expected in employees with these success factors include leadership experience, the ability to creatively identify and solve problems using critical thinking skills, working well in a team environment, and considering different points of view.

Grading
How Your Grade is Calculated
The weighting scheme for the course will be composed of the following items. See additional grading details at the end of this document.

Category	Total Percent of Grade
Weekly Homework Assignments	25 %
Weekly Reflection Journal	20 %
Video Milestone (from Milestone Wednesdays) and two Monday Learning Activity Products	30 %
Questions, Clarifications, Comments Discussion Board	5 %
Roles and Responsibilities Report	5 %
Participation and Attendance	15 %
Total	**100 %**

Module Structure and Assignments in this Course

The course content is organized by modules. Weeks **run Thursdays** to **Wednesdays**; there is one Module for each week. Each module contains learning materials, including online lecture videos, assigned readings and other course materials, that you must work through on your own, at the beginning of the week. It is strongly suggested that you log into the course on Thursdays, early in the day to view and begin the work for that week (Refer to the Student Workflow document in the Getting Started module of your Canvas course for details).

Learning Materials and Knowledge Checks (KC)

We will assess your consumption and understanding of the Learning Materials with Knowledge Checks (quiz) in Carmen. The questions will relate to all learning materials (readings, videos, articles, online lectures, etc.) in the module and gauge your understanding and application of key concepts. These Knowledge Checks do not count towards your final grade but are required for progression in the module. The knowledge checks are not timed, and you have unlimited attempts. You will need to score at least a 90% to progress in the Module. It is STRONGLY suggested that you begin working on the learning materials the day the module opens, and the knowledge checks must be completed by Saturday to progress in the module and to gain access to the link for the Monday synchronous meeting.

Clarifications, Questions, Comments- Discussion Board

After working through the Learning Materials and Knowledge Checks you may have questions, need clarification, or comments on topics (or just want to learn more!). Each week, after working through the Learning Materials and Knowledge Checks you will gain access to this board. You will reply to the prompts in the instructions. You must make an original post before you can see the posts of others. Once you do you will gain access to the link for the Monday synchronous meeting. If you do not complete the work in time, you will not gain access and cannot attend the session. This will result in loss of points and inability to access any other content in the course module.

Weekly Homework Assignments

Weekly Homework Assignments are designed to give your exposure to the practice of environmental health in a real-life context. Each student is expected to work independently on the weekly assignments, unless otherwise noted. A rubric for grading **Weekly Homework Assignments** will be available in the assignment. They are due by Wednesday at 11:59pm and can be found in the Module for that week as well as the Assignments tab in the Canvas course.

Weekly Reflection Journals

You have experienced the EH topics that we will be studying in your personal and professional lives. You have interacted with these topics in ways you may or may not have realized. You will be using journals to share your stories about your experiences with the EH topics we will

be studying throughout the course. You will receive prompts each week and you will respond to each. You will be given details for the types of submissions required (for example, a file upload, an infographic, an Adobe Spark post, etc.). A rubric for grading Weekly Reflection Journals will be available in the assignment. They are due by Wednesday at 11:59pm and can be found in the Module for that week as well as the Assignments tab in the Canvas course.

Monday Learning Activity Products

On two Mondays you will form into working groups and will be required to submit a "product" after the session. You will be doing most of the work on this "product" during Monday class time. The "products" will vary depending on the activity we do. A rubric for grading **Monday Learning Activity Products will** be available in the assignment. They are due by Wednesday at 11:59pm and can be found in the Module for that week as well as the Assignments tab in the Canvas course.

The EHS Video Project Milestones

The EHS Model Video Presentation Group Project will test your understanding of the EHS Model introduced during the first class and throughout the course. You will be responsible for meeting specific milestones throughout the semester. Your groups' "This is EHS" Video Project will consist of a written proposal, infographic, storyboard, script, and final video will be created by a group project of 4-5 students. The final product will be a recorded video of live action examples of EHS, which will include the student as "actors" being in front of the camera in the community, occupational, or home environment (for example, in a store pointing out BPA free baby toys, at a congested intersection pointing out hazards from car and diesel exhaust, a mosquito landing on or biting you, a clean energy or noise pollution source). During this course, we will be covering many topics related to EHS. (View the Schedule of Topics document in the Syllabus tab to see them all). This project is your opportunity to "deep-dive" into a topic covered in this course that you are interested in. This is your chance to really explore and learn about something that interests you personally. There are Five Major Milestones for this project. Details and due dates can be found in the course. A rubric for grading **The EHS Video Project Milestones** will be available in the assignment.

Roles and Responsibility Reports

This project is not only about creating a quality video, but also about learning to work in a cooperative and collaborative project environment. Before you start to **do** the work to meet each milestone (explained below), your group needs to develop a summary plan of *how* the work will get done, *who* will do which part, and when each part will be completed. The Roles and Responsibility Reports are summary documents outlining what you, as an individual, will be doing to produce the Milestone products and committing to the group's success. This tool will allow you to think about what you can truly give to the group and hold others in the group accountable as well, and it will be used as part of the groups' assessment of their work. To help with this report, the group milestone products will be logically broken up into tasks which will be reflected in the Milestones rubric. The Roles and Responsibility Reports will also aid in the assessment of individual grades for each milestone. A rubric for grading **Roles and Responsibility Reports** will be available in the assignment. You will complete (5) of these.

Expectation for Participation and Attendance in this Course

Participation

You are in a professional school, and a member of a learning community and therefore expected to comport yourself as a professional. Meaningful and constructive dialogue is encouraged in this class and requires a degree of mutual respect, willingness to listen, and tolerance of opposing points of view.

Class participation is an especially important part of the learning process in this course. **Participation in class discussion will be expected during Monday Activity Days**. The discussion will reflect on your required posts in the Questions, Clarification, Comments Discussion Board. The quality of your contributions and insights will surely benefit everyone taking the course. Quality comments (in online or in-class discussions) possess one or more of the following properties:

- Offers a different but relevant perspective.

- Contributes to moving the discussion and analysis forward.

- Builds on other comments.

- Transcends the "I feel" syndrome. It should include some evidence, argumentation, and demonstrate some critical and reflective thinking.

Attendance

Attendance is **mandatory** for all synchronous classes unless you are excused based upon an acceptable documented reason (see late policy).

Participation and Attendance points

To receive 1 point for participation and attendance, students must attend the entire class time and be prepared for **classroom discussions if called upon in class.**

Provisionally

Please note that this syllabus is tentative, and that the instructor reserves the right to make changes at any time, as necessary.

Class Policies for Zoom Meetings

Even though we are online, there is an expectation that the classroom will be a place of respectful discourse free from harassment and threats, and that students follow the University's Code of Student Conduct (https://trustees.osu.edu/bylaws-and-rules/code). Class participation is an especially important part of the learning process in this course but involves some additional challenges since we will be holding class in an online environment on Zoom.

- During class discourse, please remember to **mute your Zoom window unless you are speaking** so that the class is not disrupted by background sounds from your immediate environment. You can alternatively use the chat button in Zoom to ask a question, to seek clarification from the instructor, or to ask for help with access or Zoom problems.

- **Video cameras are expected to be turned on** unless you have specific documentation for accommodations or a doctor's excuse. Random screen shots will be used to assess compliance with this policy.

Office of Student Life - Disability Services

Any student who feels they may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office of Student Life: Disability Services at 614-292-3307 in Room 098 Baker Hall 113 W. 12th Ave to coordinate reasonable accommodations for students with documented disabilities (http://www.ods.ohio-state.edu/).

Mental Health Services

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 or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting HYPERLINK "http://ccs.osu.edu/"ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. 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 Suicide Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org.614-292-5766

Statement on COVID-19

The university strives to make all learning experiences as accessible as possible. Considering the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a

timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Anti-Racism Statement

The Ohio State University affirms the importance and value of diversity of people and ideas. We believe in creating equitable research opportunities for all students and to providing programs and curricula that allow our students to understand critical societal challenges from diverse perspectives and aspire to use research to promote sustainable solutions for all. We are committed to maintaining an inclusive community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among all members; and encourages each individual to strive to reach their own potential. The Ohio State University does not discriminate on the basis of age, ancestry, color, disability, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, race, religion, sex, gender, sexual orientation, pregnancy, protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment.
To learn more about diversity, equity, and inclusion and for opportunities to get involved, please visit:
https://odi.osu.edu/ (Links to an external site.)
https://odi.osu.edu/racial-justice-resources (Links to an external site.)
https://odi.osu.edu/focus-on-racial-justice (Links to an external site.)
http://mcc.osu.edu/

Respect for diversity

My intention is to create an environment for all students to learn. I am committed to affirming the identities, realities, and voices of all students especially those from historically marginalized or underrepresented backgrounds. In this course, we will use person-centered language and preferred gender pronouns. We will respect all diversity including and not limited to gender, sexuality, ability, body weight, age, socioeconomic status, ethnicity, race, culture, religion, and experiences. If you need an accommodation due to religious observances, let me know as soon as you can. I will do my best to provide an environment that is conducive to learning. I encourage you to speak with me if there is any aspect of the course that is counter-productive to your learning.

Children

If you have a child who needs to be with you during class, this is fine. Please do your best to occupy them with for example, coloring books, tablets, etc. to minimize distractions. You do not have to miss class because your childcare fell through.

Territory Acknowledgement

I acknowledge that we are occupying the traditional homelands of the Miami people. Descendants of the Ohio Miami are members of the federally recognized Miami Tribe of Oklahoma (http://www.miamination.com/), and of the unrecognized Miami Nation of Indiana. This statement is one small part of disrupting and dismantling colonial structures.

Academic integrity

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, the College of Public Health, and the Committee on Academic Misconduct (COAM) expect that all students have read and understood the University's Code of Student Conduct and the School's Student Handbook, and that all students will complete all academic and scholarly assignments with fairness and honesty. The Code of Student Conduct and other information on academic integrity and academic misconduct can be found at the COAM web page (http://oaa.osu.edu/coam/home.html). Students must recognize that failure to follow the rules and guidelines established in the University's Code of Student Conduct, the Student Handbook, and in the syllabi for their courses 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. Please note that the use of material from the Internet without appropriate acknowledgement and complete citation is plagiarism just as it would be if the source were printed material. Further examples are found in the Student Handbook. Ignorance of the Code of Student Conduct and the Student Handbook is never considered an "excuse" for academic misconduct.

If I suspect a student of academic misconduct in a course, I am obligated by University Rules to report these suspicions to the University's Committee on Academic Misconduct. If COAM determines that the student has violated the University's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in the 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.

Additional competencies

Bachelor of Science in Public Health Competencies Addressed

The following BSPH Foundational (Core) and Specialization Competencies addressed in this class are listed below. For more details, see http://cph.osu.edu/students/undergraduate

BSPH Foundational (Core) Competencies

1. Summarize the historic milestones in public health which have influenced current roles and responsibilities of current public health agencies, organizations, and systems.

2. Compare and contrast types of major domestic and international public health issues, including sources/causes of infectious/chronic diseases, transmission, risk factors, morbidity, and mortality.

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.

5. Apply the fundamental principles of the five core disciplines of public health (biostatistics; environmental health; epidemiology; health administration/policy; health behavior/promotion) to domestic and international population health issues.

6. Communicate public health information, in both oral and written forms, through a variety of media and to diverse audiences.

7. Locate, use, evaluate and synthesize public health information.

Environmental Public Health Specialization Competencies

1. Apply principles of math, chemistry, biology to applied science of environmental public health.

2. Use the Environmental Science Health model to explain environmentally-related exposures and human diseases.

3. Summarize management, technical measures, and approaches to reduce and prevent environmentally-related human diseases.

***Bachelor of Science in Public Health CEPH Foundational** Domains Addressed*
*The following **BSPH Foundational Domains and Cross Cutting Concepts** addressed in this class are listed below.*

CEPH Competencies (Domains)

1. the history and philosophy of public health as well as its core values, concepts, and functions across the globe and in society

2. the basic concepts, methods, and tools of public health data collection, use and analysis and why evidence-based approaches are an essential part of public health practice

3. the concepts of population health, and the basic processes, approaches and interventions that identify and address the major health-related needs and concerns of populations

4. the underlying science of human health and disease, including opportunities for promoting and protecting health across the life course

5. the socioeconomic, behavioral, biological, environmental, and other factors that impact human health and contribute to health disparities

6. basic concepts of legal, ethical, economic, and regulatory dimensions of health care and public health policy and the roles, influences and responsibilities of the different agencies and branches of government

7. basic concepts of public health-specific communication, including technical and professional writing and the use of mass media and electronic technology

Cross-Cutting Concepts

1. advocacy for protection and promotion of the public's health at all levels of society

2. community dynamics

3. critical thinking and creativity

4. cultural contexts in which public health professionals work

5. ethical decision making as related to self and society

6. independent work and a personal work ethic

7. networking

8. organizational dynamics

9. professionalism

10. research methods

11. systems thinking

12. teamwork and leadership

GE General Theme

Goal 1: Successful students will analyze an important topic or idea at a more advanced and in-depth level than the foundations.

1.1 Engage in critical and logical thinking about the topic or idea of the theme.

1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or idea of the theme.

Activities to achieve goal: The semester-long Environmental Health Science (EHS) Model Video Project is designed for student groups to choose one EHS topic and to make a video about how the topic applies to the EHS Model shown at the bottom of this syllabus. After the group chooses their topic, they apply critical and creative thinking to apply the topic to EACH component of the Model. For example, if they choose Vector Borne Disease (VBD) as their topic, they will need to be specific about what is the agent of their VBD. To find the agent, the next logical step will be identifying a Specific VBD, such as West Nile Virus. After the agent and the disease are identified, they will need to use critical thinking skills to apply the agent and the disease to the entire model. How does the disease agent get into the mosquito? Where does it come from? Are there environmental and ecological conditions that are critical for mosquitoes to expose humans with the virus? What are the symptoms of WNV in humans? If the agent, the WNV, resides in other species like birds and horses, why don't they get sick? In order to answer these questions, student groups will need to explore credible web pages and peer-reviewed literature AND communicate the results of their research in a non-scientific and creative manner in their video.

Goal 2: Successful students will integrate approaches to the theme by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future

2.1 Identify, describe, and synthesize approaches or experiences as they apply to the theme.

2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts.

Activities to achieve goal: For every topic within each thematic area students are assigned homework and reflections that connect to their lives. For example, there is a homework that asks students to go into the online databases of health department restaurant inspection and find their favorite restaurant around Columbus, Ohio. After students find the online inspection records, they copy and paste inspection reports for the last three years. Students are asked to look for trends in the violation, and what they believe is the worst food safety violation. Then students are asked to **reflect** on the inspection reports and their evaluation of these reports, and based upon that reflection, decide if they would go back and eat at their favorite restaurant again! Every topic has an assignment called a Reflective Journal. In these journals, students are required to reflect on the topic and creatively illustrate it using an Adobe Spark page, how they have personally experienced the topic. For example, for the topic of food safety, students are asked to reflect on their (or someone they know) experiences with a food borne illness by answering the epidemiological food borne illness investigation questions of who, what, when, where, how, and why.

- Who: is ill

- What: are their symptoms….vomiting

- When: was the onset of symptoms….about noon on 1/5/22

- Where: were they exposed: my favorite restaurant

- How: eating Chinese food off of a buffet

- Why: an investigation by the health department reveals there were food preparation workers who had infections on their ungloved hands

GE Theme Lived Environments

Goal 1: Successful students will explore a range of perspectives on the interactions and impacts between humans and one or more types of environments (e.g. agricultural, built, cultural, economic, intellectual, natural) in which humans live

1.1 Engage with the complexity and uncertainty of human-environment interactions.

1.2 Describe examples of human interaction with and impact on environmental change and transformation over time and across space

Activities to achieve goal: Students will explore a wide range of perspectives on the interactions between humans and their environments and the impacts associated with this interaction by completing assignments including Reflective Journals, Homework, the EHS Model Video term project, and Learning Activities in a flipped classroom learning environment. The Reflective Journals are creative assignments where students explore their relationship with the topic by answering prompt questions with text and graphics to illustrate their interactions with, and potential impacts from, their immediate lived environment. Examples are Journals that ask students to identify the toxic chemicals or indoor air pollutants that are present in their home environment, or their experiences with what they would identify as a healthy or unhealthy community. One Homework assignment requires students to inspect their own living environment for possible unsafe and unhealthy conditions using a HUD Housing Inspection Manual. One memorable Learning Activity requires students to use an interactive map that would track incoming and outbound aircraft and noise pollution levels in the flightpaths directly over neighborhood-built environments. The study of climate change exemplifies this ELO: human interaction with and impact on environmental change across time and space! The "Not Even Past" data and interactive map Learning Activity allowed students to visualize how US government-backed environmental injustice caused redlining in the 1930's, and how this illegal activity impacted socioeconomic status and public health, still prevalent today in Columbus, Ohio census tracks.

Goal 2: Successful students will analyze a variety of perceptions, representations and/or discourses about environments and humans within them.

2.1 Analyze how humans' interactions with their environments shape or have shaped attitudes, beliefs, values and behaviors.

2.2 Describe how humans perceive and represent the environments with which they interact.

2.3 Analyze and critique conventions, theories, and ideologies that influence discourses around environments

Activities to achieve goal: Students will explore a wide range of perspectives on the interactions and impacts between humans and their environments by completing assignments including Reflective Journals, Homework, the EHS Model Video term project, and Learning Activities in a flipped classroom learning environment. A popular Homework is one that students name their favorite restaurant (based on attitudes, beliefs, values, and behaviors) in Columbus or its suburbs and open the Columbus Public Health and Franklin County Public Health on-line food service inspection reports. The instructions require the student to open actual inspection reports of their favorite restaurant, review three years of critical violations, determine the most critical violation and any trends that are shown from the inspections over time, and decide, based upon those reports, whether to eat there again. A Reflective Journal (RJ) assignment asks the students to identify an ethical dilemma that they have experienced in their lives. This RJ meets ELO 2.1 because "environments" are broadly defined in environmental public health to include the social determinants of health, and ethical decision-making could be a determinant of health and wellbeing. In the module Trust and Mistrust of Science, students are required to reflect on how they perceive science by watching three videos: Alan Alda: Why you should trust science even if you're a skeptic, Bill Nye Responds to Anti-Science Tweets, and Bill Nye Explains the Scientific Method and His Greatest Accomplishment in Life | Big Think. This module teaches students to critically analyze scientific discoveries to assure that their perceptions and the description of the science of environmental public health are correctly communicated, and to understand that these discoveries represent our current knowledge and that additional scientific studies may be needed to determine the actual truth.

GE Theme Sustainability

Goal 1: Students analyze and explain how social and natural systems function, interact, and evolve over time; how human wellbeing depends on these interactions; how actions have impacts on subsequent generations and societies globally; and how human values, behaviors, and institutions impact multi-faceted, potential solutions across time.

1.1 Describe elements of the fundamental dependence of humans on Earth and environmental systems and on the resilience of these systems.

1.2 Describe, analyze and critique the roles and impacts of human activity and technology on both human society and the natural world, in the past, currently, and in the future.

1.3 Devise informed and meaningful responses to problems and arguments in the area of sustainability based on the interpretation of appropriate evidence and an explicit statement of values.

Activities to achieve goal: This course contains modules on Sustainability, Resilience, and Climate Change. Students are introduced to the United Nations Sustainability Development Goals (UNs SDGs) in various modules throughout the course such as

Water Resources, Water Pollution, and Ecology, Ecosystems, and Environmental Health, where students are introduced the impact of population growth on ecosystems and climate change. The climate change topic features current and projected data of human's impact on the environment that is associated with changes in our climate. It will become clear to students that there is a fundamental dependence of humans on the earth and sustainable environmental systems, and the resilience of these systems. Students are asked to describe sustainability in the context of its importance to their daily lives and to reach their own conclusions about the importance of sustainability on a local, state, nation, international. and global scale. The following prompts are for students to reflect on the importance of the practice of sustainability: Listen to both sides of the issue; Research the truth for yourself; Be careful where you get your information on both sides of the issue; Reach a conclusion as a scientist; Let that conclusion guide you personally; It's not all about you, no matter what side of the issue you fall on; Take action individually or in your community, develop a professional passion; Take action for future generations of people who mean anything to you. The introductory module of the course contains a section on Ecology, Ecosystems, and Environmental Health, that includes Learning Materials on topics of Population Dynamics and the Impact of Growth on Ecosystems. The concept of an ecosystem is introduced during the first week of class to broaden the student's view of their environment, even beyond the definition of EHS learned in this same module…beyond the new definition of EHS that captures the social determinants of health. Conceptually, the science of environmental health is the study of human interaction with their environment, and traditionally, it is the study of factors or agents in the environment that may affect human health, which is a narrow approach to the complex relationship humans have with their environment. This course takes this concept and teaches it from an ecological perspective, i.e., the importance of understanding human's give-and-take relationship with our planet and its ecosystems. In the topics of Climate Change, Ecology, Ecosystems, and Environmental Health, Part I: Effects of Growth on Ecosystems, and Part II: Population Dynamics, students explore the complicated web of not just how physical, chemical, biological, social, and psychosocial factors affect humans, but how humans are impacting our ecosystems and our planet, leading to a potentially irreversible environmental and public health crisis if our planet's resources lose their capacity to support us. At our current rate of consumption, we need 1.5 earths to support our growth, and in 75 years, if this growth is unabated, we will need 5 earths to support us!

Final Grade

Grade	Percentage	Meaning
A	100-93	Outstanding performance; consistently shown exceptional depth of understanding and/or capacity for creative application of course concepts
A-	92.9-90	Very strong performance with demonstrated depth of understanding and/or ability to apply course concepts
B+	89.9-87	Performance at an expected level; work is complete and shows solid understanding and application of course concepts

| B	86.9-83	Adequate performance: work is complete but shows some limitations in grasp or ability to apply course concepts
B-	82.9-80	Marginally acceptable; work is conducted only to meet minimum course requirements
C+	79.9-77	Indicates only average understanding or application of course concepts
C	76.9-73	
C-	72.9-70	
D+	69.9-67	Below average or failure to meet stated course requirements
D	66.9-60	
E	<60	

Figure 1. The One Health EHS Model
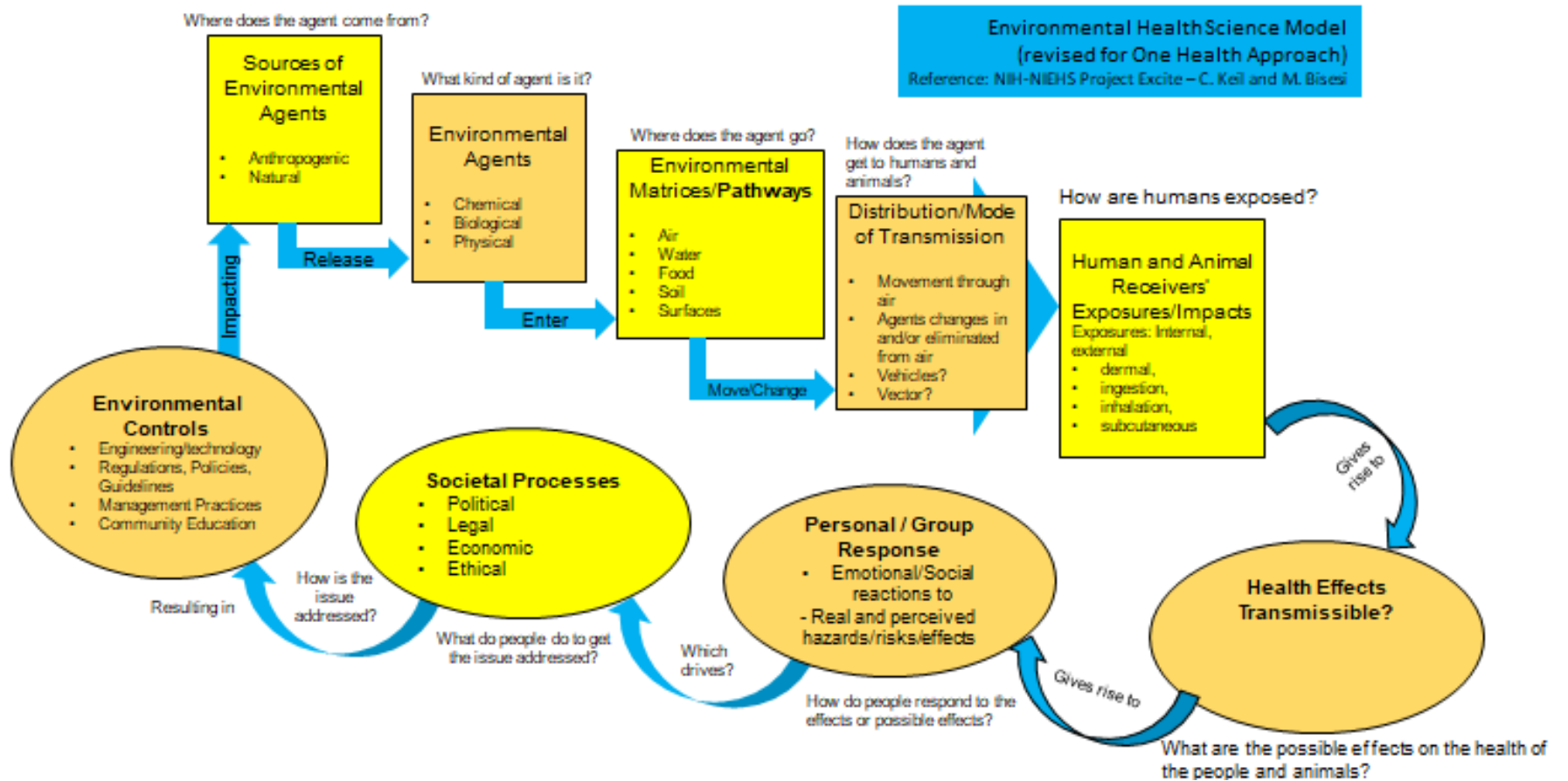
Table 1: Schedule of Topics.

| Italics | = Synchronous Sessions in Zoom |

MOD #	TOPICS	THR	FRI	SAT	SUN	*MONDAY SYNCHRNOUS ACTIVE LEARNING DAYS*	TUES	*WED SYNC MILESTONE DAYS HOMEWORK AND REFLECTIVE JOURNALS- DUE 11:PM*
							8/24 MODULE 1 OPENS EARLY OTHERS OPEN ON THURS	8/25 WELCOME and INTRODUCTION
1	Introduction to Environmental Health, The EHS model Ecology, Ecosystems, and Environmental Health, Part I: Effects of Growth on Ecosystems Ecology, Ecosystems, and Environmental Health, Part II: Population Dynamics	8/26	8/27	8/28 MODULE 1 Discussion Board Post due 11:59pm	8/29	8/30 First ACTIVE LEARNING DAY	8/31	9/1 **Milestone 1.a. EHS Model Video Presentation DRAFT Written Proposal (Version 1) OPENS 9:10.** Homework Assignment #1 Reflective Journal #1
2	Environmental Epidemiology Environmental Health Justice Environmental Health Ethics	9/2	9/3	9/4 MODULE 2 Discussion Board Post due 11:59pm	9/5 **Milestone 1.a DUE 11:59pm** Roles and Responsibilities Doc #1 DUE 11:59PM	9/6 NO CLASS	9/7	9/8 **Milestone 1.b. EHS Model Video Presentation DRAFT Written Proposal (V2) OPENS 9:10** Homework Assignment #2 Reflective Journal #2
3	Environmental Toxicology Environmental Diseases, Part I Environmental Diseases, Part II	9/9	9/10	9/11 MODULE 3 Discussion Board Post due 11:59pm	9/12	9/13 **Milestone 1.b. DRAFT Written Proposal (Version 2) DUE 11:59pm**	9/14	9/15 **Milestone 1.c. FINAL Written Proposal OPENS 9:10am** Homework Assignment #3 Reflective Journal #3

MOD #	TOPICS	THR	FRI	SAT	SUN	*MONDAY SYNCHRNOUS ACTIVE LEARNING DAYS*	TUES	*WED SYNC MILESTONE DAYS HOMEWORK AND REFLECTIVE JOURNALS- DUE 11:PM*
4	Toxic Substances (POPs, PAHs, VOCs, Solvents, Plastics, Asbestos, Metals) Toxic Substances (Contaminants of emerging concern (CECs), EDCs)	9/16	9/17	9/18 MODULE 4 Discussion Board Post due 11:59pm	9/19	9/20 **Milestone 1.c. FINAL Written Proposal DUE 11:59pm**	9/21	9/22 **Milestone 2Infographic OPEN 9:10am** Homework Assignment #4 Reflective Journal #4
5	Food Quality, Part I Food Quality, Part II Food Security	9/23	9/24	9/25 MODULE 5 Discussion Board Post due 11:59pm	9/26	9/27	9/28 **Milestone 2 Infographic DUE 11:59pm** Roles and Responsibilities Doc #2 DUE 11:59PM	9/29 **Milestone 3 Storyboard OPENS 9:10** Homework Assignment #5 Reflective Journal #5
6	Vector Borne Diseases and Pesticides Zoonotic Diseases	9/30	10/1	10/2 MODULE 6 Discussion Board Post due 11:59pm	10/3	10/4	10/5 **Milestone 3 Storyboard DUE 11:59pm** Roles and Responsibilities Doc #3 DUE 11:59pm	10/6 **Milestone 4.a. Script DRAFT (Version 1) OPENS 9:10AM** Homework Assignment #6 Reflective Journal #6
7/8 COMBINED	Air Quality, Part I Air Quality, Part II	10/7	10/8	10/9 MODULE 7 Discussion Board Post due 11:59pm	10/10	10/11	10/12	10/13 **Milestone 4.a. Script DRAFT (Version 1) DUE 11:59 PM** Roles and Responsibilities Doc #4 DUE 11:59PM
	Radiation Noise Pollution and Health	10/14 NO CLASS BREAK	10/15 NO CLASS BREAK	10/16	10/17	10/18 Learning Activity #1 DUE 11:59PM	10/19	10/20 **Milestone 4.b. Script FINAL OPENS 9:10 AM** Homework #7 Reflective Journal #7 Reflective Journal #8

MOD #	TOPICS	THR	FRI	SAT	SUN	MONDAY SYNCHRNOUS ACTIVE LEARNING DAYS	TUES	WED SYNC MILESTONE DAYS HOMEWORK AND REFLECTIVE JOURNALS- DUE 11:PM
9	Water Pollution and Health / UN SDG Water Sanitation and Hygiene (WASH) Safe Drinking Water Resources /UN SDG Water Sanitation and Hygiene (WASH)	10/21	10/22	10/23 MODULE 9 Discussion Board Post due 11:59pm	10/24	10/25	10/26	10/27 **Milestone 4.b. Script FINAL DUE 11:59 PM** **Milestone 5.a. Record EHS Model Video V1 OPENS** Roles and Responsibilities Doc #5 DUE 11:59PM Homework Assignment #8 Reflective Journal #9
10	Solid and Hazardous Waste Management, Part I Solid and Hazardous Waste Management, Part II	10/28	10/29	10/30 MODULE 10 Discussion Board Post due 11:59pm	10/31	11/1	11/2	11/3 **Milestone 5.a. Record EHS Model Video V1 DUE 11:59** *(No Homework Assignment)* Reflective Journal #10 *(No Homework Assignment)*
11	Healthy Homes, Communities, Social Determinants of Health Indoor Air Quality	11/4	11/5	11/6 MODULE11 Discussion Board Post due 11:59pm	11/7	11/8	11/9	11/10 **Milestone 5.b. EHS Model Video V2 for Peer Review OPENS 9:10am.** **Milestone 4.c. Script REVISED FINAL (OPTIONAL) DUE 11:59 PM** *(No Homework Assignment)* Reflective Journal #11
12	Exposure Science Risk Assessment Introduction to Risk Management, Environmental Policy Development, Standard Setting and Regulations	11/11 NO CLASS	11/12	11/13 MODULE12 Discussion Board Post due 11:59pm	11/14	11/15 **Milestone 5.b. EHS Model Video V2 for Peer Review DUE 11:59 PM**	11/16	11/17 **Milestone 5.c. Complete Review of Peers' Videos. OPENS 9:10** *(No Homework Assignment)* Reflective Journal #12

MOD #	TOPICS	THR	FRI	SAT	SUN	MONDAY SYNCHRNOUS ACTIVE LEARNING DAYS	TUES	WED SYNC MILESTONE DAYS HOMEWORK AND REFLECTIVE JOURNALS- DUE 11:PM
13/14 COMBINED	Risk Communication Geospatial Data for EHS	11/18	11/19 **Milestone 5.c. Complete Review of Peers' Video DUE 11:59PM**	11/20 MODULE 13 Discussion Board Post due 11:59pm	11/21	11/22	11/23	11/24 NO CLASS BREAK
	Trust and Mistrust in Science Environmental Public Health from Theory to Practice	11/25 NO CLASS BREAK	11/26 BREAK NO CLASS	11/27	11/28	11/29 Learning Activity #2	11/30 **Milestone 5.d. FINAL EHS Module Video DUE 11:59pm**	12/1 **Milestone 5.e. OPENS** No Homework Assignment Reflective Journal #13 Reflective Journal #14
15	Sustainability and Environmental Health Climate Change, Public Health, and Renewable Energy	12/2	12/3	12/4 **Milestone 5.e and** MODULE15 Discussion Board Post due 11:59pm	12/5	12/6	12/7	12/8 LAST DAY OF CLASSES **Milestone 5.f.** Golden Globes. Homework Assignment #9 Reflective Journal #15

Table 2. Weekly Assignment Open and Due Dates

Weekly Assignments	Open Date/Time	Due Date/Time
GRADED		
Weekly Homework	Thursday when module opens (12:01am)	Wednesday 11:59 pm
Weekly Reflection Journals	Thursday when module opens (12:01am)	Wednesday, 11:59 pm
Questions, Comments, Concern Discussion Board	Thursday when module opens (12:01am).Not accessible until all Learning Materials viewed and Knowledge Checks completed	Saturday, 11:59pm
Learning Products	These assignments are started and completed during synchronous class time on two Active Learning Mondays.	Due by 10:05 am, at end of class time, unless otherwise indicated.
Video Milestones	Varies. Check Course Calendar	Varies. Check Course Calendar
Roles and Responsibilities	Varies. Check Course Calendar	Varies. Check Course Calendar
UNGRADED BUT REQUIRED		
Knowledge Checks	Thursday when module opens (12:01am). Must be completed before you can post to Questions, Concerns, Comments Discussion board .	by Sat 11:59pm

Week	Topics	Aligned Course Learning Objective	Aligned Foundational Domains	Aligned Foundational Competencies	Aligned Specialization Competencies	Readings/ Other Assignments	Student Evaluation Activity for Assessment
1	*Introduction to Environmental Health, The EHS model*	1,2,22	1,3	1,5	2	1. **Required:** a. https://www.cdc.gov/cdctv/environmentalhealth/environmental-health-services-important.html b. https://www.youtube.com/watch?v=DxmjMH600aw c. https://www.youtube.com/watch?v=kB0JA7jsqMw	Assignment, quiz, learning activity, case study, project milestone activity, reflection journal
	Ecology, Ecosystems, and Environmental Health Part I: Effects of Growth on Ecosystems	3				1. **Required:** a. Textbook Chapter 1: Introduction to Ecological Principles; b. Read Chapter 2 PDF: Ecology and Ecosystems as Foundational for Health	
	Ecology, Ecosystems, and Environmental Health, Part II: Population Dynamics	3				1. **Required:** a. Textbook Chapter 1: Introduction to Ecological Principles. b. Read Chapter 2 PDF: Ecology and Ecosystems as Foundational for Health c. Textbook Chapter 2: Population Dynamics d. Textbook Chapter 4: Impact of Growth on Ecosystems	
2	Environmental Epidemiology	4,22	1,2,3	1,4,5,7	1,2	1. **Required:** a. https://www.ncbi.nlm.nih.gov/books/NBK233644/ i. Ecological Studies, Case Control Studies, Cohort Studies and Cross-Sectional Designs b. https://www.youtube.com/watch?v=J9p4qk-JuC8	Assignment, quiz, learning activity, case study, project milestone activity, reflection journal
	Environmental Health Justice	7,22				1. **Required:** a. https://www.nrdc.org/stories/environmental-justice-movement b. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2022674/#!po=7.14286	

	Environmental Health Ethics	6				1. **Required:**
						   a. [Read How Many Principles for Public Health Ethics](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2804997/): https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2804997/
						      i. GENERAL MORAL PRINCIPLES, The Precautionary Principle	

3	Environmental Toxicology	5,22	1,3,4.5	1,2,3,4,5,7	1,2	1. **Required:**
						   a. [ATSDR - Environmental Health Resources Self Learning Module Toxicology](#)
						   b. [Woman dies after drinking water](#)
						   c. [Epidemiologic Evidence on the Health Effects of Perfluorooctanoic Acid (PFOA)](#)
						      1. [Association of Perfluorooctanoic Acid and Perfluorooctane Sulfonate with Serum Lipids Among Adults Living Near a Chemical Plant](#)
							Assignment, quiz, learning activity, case study, project milestone activity, reflection journal

	Environmental Diseases, Part I	8,9,10,11				1. **Required:**
						   a. [WHO: Preventing disease through healthy environments](#)
						   b. [Association of pesticide exposure with human congenital abnormalities](#)	

	Environmental Diseases. Part II	8,9,10,11				1. **Required:**
						   a. [THE THALIDOMIDE TRAGEDY: LESSONS FOR DRUG SAFETY AND REGULATION](#)
						   b. [Pesticides and cancer](#)
						   c. Textbook Chapter 5	

| 4 | Toxic Substances (POPs, PAHs, VOCs, Solvents, Plastics, Asbestos, Metals) | 8,9,10,11,23 | 3,4,5,8 | 2,3,4,5,7 | 2,3 | **1. Required**
  a. Chapter 6 of text
  b. The Love Canal Disaster (Links to an external site.)
  c. (Links to an external site.)DHHS cancer classifications (Links to an external site.)
  d. (Links to an external site.)EPA Cancer classifications (Links to an external site.)
  e. WHO International Agency on the Research on Cancer (IARC) cancer classification
2. Practice-based materials:
  a. My chemical free house (Links to an external site.)
  b. Practice searching properties near OSU campus. Read results:
    i. Columbus, Ohio, DPU Customer Lead Map (Links to an external site.)
  c. (Links to an external site.)Consumer Product Safety Commission recall on Children's toy with lead paint (Links to an external site.)
  d. Consumer advocacy website on safer chemicals | Assignment, quiz, learning activity, case study, project milestone activity, reflection journal |
| | *Toxic Substances (Contaminants of emerging concern (CECs), EDCs)* | 8,9,10,11,23 | | | | **1. Required:**
  a. Read Chapter 6 in text
  b. Read the following section: "Review":
    i. A review of what is an emerging contaminant (Links to an external site.)
  c. Read entire article:
    i. Bisphenol A and Human Reproductive Health
2. Practice-based materials:
  a. Practice searching for fish | |

5	Food Quality, Part I	8,9,10,11,23	3,4,5,8	2,3,4,5,7	2,3	1. **Watch videos:**
						   a. Food Safety Modernization Act CBS news: Where America Stands
						   b. A little girl's death: the tragic history to the passage of the
						2. **Required:**
						   a. Chapter 8 in text
						   b. Risk Assessment of Growth Hormones and Antimicrobial Residues in Meat
						3. **Practice-based materials:**
						   a. FDA: Steroid Hormone Implants Used for Growth in Food-Producing Animals
						   b. Are you really buying grass-fed beef?
						   c. Organic 101: What the USDA Organic Label Means
						   d. What 'No Antibiotics' Claims Really Mean...be sure to open video
						   e. Questions and Answers about Antibiotics in Chicken Production
							Assignment, quiz, learning activity, case study, project milestone activity, reflection journal

	Food Quality, Part II	8,9,10,11,23				1. **Watch videos:**
						   a. https://youtu.be/mGuAQS5eFs8
						   b. https://youtu.be/odiEvTOWDNs
						   c. https://youtu.be/su0U37w2tws
						   d. https://youtu.be/KcfmeIhoyRQ
						2. **Required readings:**
						   a. Chapter 8 of text
						3. **Practice-based materials:**
						   a. National outbreak reporting system (NORS)
						   b. CDC food borne outbreak investigations
						   c. Food borne outbreaks in 2018
						   d. CDC estimates of the burden of food borne illness in the US
						   e. WHO: The burden of foodborne diseases is substantial
						   f. Ohio Administrative Code on Food Safety	

	Food Security	12,13,14				1. **Watch videos:**
						   a. Addressing Food Security in the US
						   b. Guide to dumpster diving	

							c. [Mid-Ohio Food Bank...Not My Day To Eat](#)
							2. Practice-based materials:
							   a. [World Food (Links to an external site.) Programme (Links to an external site.)USDA MY PLATE](#)
							   b. [https://sdgs.un.org/ (Links to an external site.)goals](#)
							   c. [The Ohio Association of Foodbanks](#)
							   d. [VOLUNTEERS OF AMERICA Food Program](#)
							   e. [AmpleHarvest.org](#)
							   f. [Feeding America](#)
							   g. [Find Your Local Food Bank](#)	

6	Vector Borne Diseases and Pesticides	8,9,10,11,23	3,4,5,8	2,3,5,7	2,3		**1. Required readings:**
							   a. Chapter 7 of text
							   b. **[This is a good article to scan if you want to learn about Vector-Borne Disease Emergence and Resurgence on a global scale](#)**
							2. Practice based materials
							   a. Learn how to search site **[Arbonet](#)**
							   b. Open Trap and WNV data and experiment with searching for WNV and Aedes albopictus data:
							      i. [Franklin County Public Health mosquito control program](#)
								Assignment, quiz, learning activity, case study, project milestone activity, reflection journal

	Zoonotic Diseases	8,9,10,11,23					**1. Watch videos:**
							   a. [Watch Video: Raccoon Steals Cats' Food (Original)](#)
							      i. Raccoon attacking family's cat caught on video
							   b. [https://youtu.be/Z5IGPuB4Jtc](#)
							2. Scan for content. Read whatever is interesting to you:
							   a. [CDC - "What is Ebola Virus Disease?"](#)
							   b. [CDC - 8 Zoonotic Diseases Shared Between Animals and People of Most Concern in the U.S."](#)
							   c. [CDC - Diseases That Can Spread Between Animals and People](#)	

						d. CDC Rabies in Small Animals e. CDC Healthy Pets, Healthy People f. CDC Video: One Health: From (Links to an external site.) Concept (Links to an external site.)to Action	
7	Air Quality, Part I	8,9,10,11,23	3,4,5,8	2,3,4,5,7	2,3	1. **Required:** a. Chapter 11: Textbook b. National Ambient Air Quality Standards c. 2015 Non-Attainment Area for 2015 Ozone Standards d. Green Book 8-Hour Ozone (2015) Area Information e. EPA, Ohio: Columbus is Nation's First Non-Attainment Area to Meet Ozone Air Quality Standard f. Initial List of Hazardous Air Pollutants with Modifications	Assignment, quiz, learning activity, case study, project milestone activity, reflection journal

| | Air Quality, Part II | 8,9,10,11,23 | | | | 1. **Required:**
  a. **Chapter 11: Textbook**
2. **Practice based materials**
  a. Sign up for Alerts (not required) MORPC: Stay Informed: Air Quality Alerts and Forecasts
  b. Open and explore: World's Air Pollution: Real-time Air Quality Index
  c. Review Table on Pages 4 and 5: Technical Assistance Document for the Reporting of Daily Air Quality – the Air Quality Index (AQI)
  d. **Review: What is the U.S. Air Quality Index (AQI)?**
  e. **Open website, click on the Layer Map Symbol in the upper right hand corner and then click on which Criteria Air Pollutant (CAP) monitoring station you are interested in**: AirData Air Quality Monitors
  f. Open and EPA interactive map of | |

| 8 | Radiation | 8,9,10,11, 23 | 3,4,5,8 | 2,3,4,5,7 | 2,3 | 1. **Watch videos:**
  a. [What Does a Nuclear Bomb Explosion Feel Like?](#)
  b. [Poisoning of Alexander Litvinenko](#)
2. **Required -**
  a. Chapter 9 in text
  b. [Radiation Basics (Links to an external site.)](#): Review Ionizing and non-ionizing radiation, Electromagnetic spectrum, Types of ionizing radiation, Periodic Table, radioactive decay
  c. [Protecting Yourself from Radiation (Links to an external site.)](#): Review time, distance and shielding
3. **Practice-based materials:**
  a. [Radiation Sources and Doses (Links to an external site.)](#): Review background radiation, average U.S. doses and sources
  b. [Ohio Emergency Response Plan (Links to an external site.)](#)
    i. Download to PDF and search for "dirty bomb"
    ii. Go to the TERRORISM INCIDENT ANNEX and search for the word "nuclear" | Assignment, quiz, learning activity, case study, project milestone activity, reflection journal |
| | Noise Pollution and Health | 8,9,10,11,23 | | | | 1. **Watch this video:**
  a. [CDC: Keep the Volume Down](#)
2. **Required:**
  a. Read textbook chapter 12, pages 357 to 370
  b. Read 2329.11 - Community noise
  c. Read page:
    i. [Everything You Should Know About Sound](#)
  d. Read Abstract, Section I except B and C; Section II A to H:
  e. [The Adverse Effects of Environmental Noise Exposure on Oxidative Stress and Cardiovascular Risk](#)
  f. [Hearing Conservation - H291](#) | |

9	*Water Pollution/UN SDG Water Sanitation and Hygiene (WASH)*	8,9,10,11,23	3,4,5,8	2,3,4,5,7	2,3	1. **Required:**
						  a. Sustainable Development Goal (SDG) 6: Clean Water and Sanitation
						  b. Chapter 14 of text
						  c. Public Health Effects of ~~Inadequately Managed~~
							Assignment, quiz, learning activity, case study, project milestone activity, reflection journal

	Safe Drinking Water Resources /UN SDG Water Sanitation and Hygiene (WASH)	8,9,10,11,23				1. **Required:**
						  a. Chapter 13 of text
						  b. Lessons from Waterborne Disease Outbreaks
						    i. Read Conclusions and Outcomes, The 1993 Milwaukee cryptosporidiosis outbreak
						  c. Case Study: A massive outbreak of gastroenteritis on a Lake Erie Island
						    i. Read and try to understand how this outbreak happened
						  d. Sustainable Development Goal (SDG) 6: Clean Water and Sanitation	

10	Hazardous Waste Management	8,9,10,11,23	2,4,5,8,9	4,5,6,7	1,2,3	1. **Watch video**
						  a. CSB Safety Video: Emergency in Apex
						2. **Required**:
						  a. Read Chapter 15 of text.
						  b. Read on web page:
						    i. What is a Hazardous Waste
						    ii. Cradle to grave of hazardous waste
						  c. What is a Hazardous Material and Hazardous Waste
						  d. Treatment and recovery of hazardous waste
							Veolia	Assignment, quiz, learning activity, case study, project milestone activity, reflection journal

	Solid Waste Management	8,9,10,11,23				1. **First watch these videos:**
						  a. [What Happens to NYC's 3.2 million Tons of Trash | Big Business](#)
						  b. [China's Waste Ban Is Causing a Trash Crisis in The U.S. (HBO)](#)
						  c. [If You Don't Know, Now You Know - Asian Nations Reject Western Trash | The Daily Show](#)
						  d. [The Great Pacific Garbage Patch Is Not What You Think It Is | The Swim](#)
						2. **Required**:
						  a. Read what you need to get a sense of the problem of marine litter
						    i. [THE UNITED STATES FEDERAL STRATEGY FOR ADDRESSING THE GLOBAL ISSUE OF MARINE LITTER](#)
						  b. Review page: [Facts and Figures about Materials, Waste and Recycling](#)
						  c. ["What is RCRA:" Resource Conservation and Recovery Act (RCRA) Overview](#)
						  d. [What is a Municipal Solid Waste Landfill?](#)
						  e. [Municipal Solid Waste Transfer Stations](#)
						  f. [SWACO Virtual Tour of the Franklin County Sanitary Landfill](#)	

11	Healthy Homes and Communities, Social Determinants of Health	8,9,10,11	2,4,5,8,9	4,5,6,7	1,2,3	1. **Watch this video:**
						  a. [Lasting Impact of Cleveland's 'Redlined' Neighborhoods](#)
						2. **Required:**
						  a. [Confronting the Legacy of "Separate but Equal": Can the History of Race, Real Estate, and Discrimination Engage and Inform Contemporary Policy?](#)
						  b. Zoom to Cleveland Ohio, and Columbus, Ohio and note the racial segregation. Compare to redlining maps in the article
							Assignment, quiz, learning activity, case study, project milestone activity, reflection journal

	Indoor Air Quality	8,9,10,11				above: Interactive Map of US Communities
						3. **Practice-based materials**
						  a. Open map below and click on "Introduction/About." Click on a census track and find its HOLC grade in the left "1930s" column. Follow that census track as it transitioned into its current social vulnerability score in the right-hand column. Open the current health outcome data for the census tract and compare those data to other census tracks within that health outcome. Do you notice the 1930s redlined areas have the poorest current health outcomes, unless the census tract made a substantial transition from a higher to a lower vulnerability score:
						    i. Not Even Past
						  b. **Open and familiarize yourself with the document -** Healthy Housing Inspection Manual
						  c. **Review brochure: -** HUD Healthy Homes Program
						  d. **Review Webpage: -**CPH Healthy Homes Program
						
						1. **First watch this video:**
						  a. Did you know - using a clean cookstove can protect your health?
						2. **Required:**
						  a. **Open and review the resource materials:** EPA Indoor Air Quality (IAQ) web page	

12	Exposure Science	8,9,18	2,3,6	5,7	2	1. **Required:** a. **Read "Summary:"** Exposure Science in the 21st Century	Assignment, quiz, learning activity, case study, project milestone activity, reflection journal
	Risk Assessment	*18,19*				1. **Required:** a. **Read Chapter 1, 1.1 to 1.8.** Environmental Health Risk Assessment, Guidelines for Assessing Human Health Risks from Environmental Hazards	

Week	Topic					Required Readings / Materials	Assessments
						b. **Read page:** Conducting a Human Health Risk Assessment c. **Read Sections 1.3 and 1.4** Reference Dose (RfD): Description and Use in Health Risk Assessments	
	Introduction to Risk Management, Environmental Policy Development, Standard Setting and Regulations	19				1. **Required:** a. **Read page from beginning to "Risk Management Guidance Documents" EPA Risk Management** b. **Read Chapter 1, 1.1 to 1.8. Pay particular attention to 1.4THE DISTINCTION BETWEEN RISK ASSESSMENT AND**	
13	Risk Communication	19	7	6	2	1. **Read page:** EPA Risk Communication: The SALT Framework 2. **Watch 3 videos:** EPA Risk Communication videos	Assignment, quiz, learning activity, case study, project milestone activity, reflection journal
	Geospatial Data for EHS	19,20	2,3,7	3,6,7	3	1. **Required:** a. **Watch 0 to 8 minutes 33 seconds:** i. The NIEHS Exposure Science and the Exposome Webinar Series 4. **Practice-based materials** b. This easy to use, interactive mapping application does not require any GIS skills to use and provides ready access to 500+ maps and multiple analysis tools 2. **EnviroAtlas Interactive Map**	
14	Sustainability and Environmental Health	12,13,14	3,5,6	3,4	3	1. **Required:** a. The Lazy Person's Guide to Saving the World b. Video #1: We the People for The Global Goals c. Video #2: UNs SDGs (Links to an external site.)	Assignment, quiz, learning activity, case study, project milestone activity, reflection journal
	Climate Change and Public Health, Clean Energy	15, 17	5,6	2,4,5,6,7	3	1. **Required:** a. Climate 101: Cause and Effect b. Weathergirl Goes Rogue	

						c. A nostalgic [Joni Mitchell Big Yellow Taxi environmental protest (Links to an external site.)](#)song during the 1970's environmental revolution.
						d. [12 Essential Songs for Fighting the Climate Crisis](#)
						e. [The 10 Best Protest Songs About Climate Change](#)
						2. Practice-based materials
						  a. Read pages: 2-31, summary for policy makers
						    i. [Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC)](#)
						  b. Read: [Life in a 'degrowth' economy, and why you might actually enjoy it](#)	

15	Trust and mistrust in science	19,21	5	6,7		**1. Required:**
						  a. [Alan Alda: Why you should trust science even if you're a skeptic](#)
						  b. [Bill Nye Responds to Anti-Science Tweets](#)
						  c. [Bill Nye Explains the Scientific Method and His Greatest Accomplishment in Life
							Big Think](#)
							  d. [Science and Pseudo-Science](#)
							    i. **Read:** [2. The "science" of pseudoscience](#)
							    ii. **Read:** [3. The "pseudo" of pseudoscience](#)
							      1. [3.1 Non-, un-, and pseudoscience](#)
							      2. [3.2 Non-science posing as science](#)
								Assignment, quiz, learning activity, case study, project milestone activity, reflection journal

	Environmental Public Health from Theory to Practice	22,23, 24,25	1,3,6	3		**1. Required:** **1.** [Why Are Environmental Health Services So Important?](#)	

						2. [The National Environmental Health Association website.](#)
						   1. Open "Professional Development" and click on "Careers"
						   2. Review Current Job Listings	

GE THEME COURSES
Courses that are accepted into the General Education (GE) Themes must meet two sets of Expected Learning Outcomes (ELO). One set is common for all GE Themes and one set is to the specific Theme to which the course belongs. Courses may be accepted into more than one Theme, but ELOs for each Theme must be met.

In this form, please describe how your class will meet the ELOs for the Theme(s) for which they seek approval. Please use language that is clear and concise and that colleagues outside of your discipline will be able to follow. The text boxes expand as you type, so you need not limit your response to the size of the box. Because this document will be used in the course review and approval process, you should be *as specific as possible*, listing concrete activities, specific theories, names of scholars, titles of textbooks etc. Your answers will be evaluated in conjunction with the syllabus submitted for the course.

Course subject & number: Issues in Global Environmental Health | PUBHEHS 3310 |
General Expectations of All Themes

GOAL 1: Successful students will analyze an important topic or idea at a more advanced and in-depth level than the foundations.

Please briefly identify the ways in which this course represents an advanced study of the focal Theme.
In this context, advanced refers to courses that are e.g., synthetic, rely on research or cutting-edge findings, or deeply engage with the subject matter, among other possibilities.

Students deeply engage in subject matter and rely on cutting edge research during this course by being introduced to current scientific literature on the topics being studied. An example of this is during the study of toxic chemical exposure, specifically exposure to Bisphenol A (BPA), an endocrine disruptor chemical. Students are NOT JUST presented with A cursory review of this chemical and its impact on human health, but, instead, are introduced to the most recent peer reviewed scientific literature and current policies, investigations, and advisories of US governments agencies to protect public health (Bisphenol A and Human Reproductive Health). Students are not just introduced to Rachel Carson's *Silent Spring* (1962) about her concerns for DDT and environmental and human health, but we review toxicological profiles of DDT from 2002 and 2012 to learn how the cancer risk assessments changed during that time frame (Link). A foundational course may mention the Dupont Chemical C8, and how manufacturers of Teflon coated pans removed this product from the market due to its effects on human health. In this course, students are introduced to the case study of a large community of SE Ohioans who were exposed to C8 in their drinking water, and the scientific studies of this communitys' health effects from exposure to C8 (Association of Perfluorooctanoic Acid and Perfluorooctane Sulfonate With Serum Lipids Among Adults Living Near a Chemical Plant). Students are taught about exposures to chemicals from grilled charred meats and the risk of colorectal cancer, the risks associated with particulate matter air pollution and heart disease, the risk of colorectal cancer from red meat consumption, and the association between talcum powder use and ovarian cancer. They read peer reviewed journal articles using their own knowledge level of science and are asked to formulate an educated opinion of the "truth" from these articles. Students are challenged throughout the course to take deep dives into a particular scientific discovery, or their perception the risks communicated from these studies, to challenge their own perceptions. These articles introduced students to the importance of the discovery of biophysiological mechanisms that supported the concept of "causation": (Epidemiology of colorectal cancer, The Association Between Talc Use and Ovarian Cancer, Red Meat-Derived Nitroso Compounds, Lipid Peroxidation Products and Colorectal Cancer, Air particulate matter and cardiovascular disease: the epidemiological, biomedical and clinical evidence). A 2014 article, A review of what is an emerging contaminant, was assigned to illustrate the breadth of the new and reemerging chemicals of concern, to supplement the lecture material. The Adverse Effects of Environmental Noise Exposure on Oxidative Stress and Cardiovascular Risk was assigned to study noise pollution's effect on cardiovascular risk, which is usually not considered as an effect of noise pollution. Nevertheless, it makes a case that includes a physiological mechanism that noise may be associated with CVD! An example of a deep dive into how housing conditions and redlining is a social determinant of health is the study entitled Confronting the Legacy of "Separate but Equal": Can the History of Race, Real Estate, and Discrimination Engage and Inform Contemporary Policy?

ELO 1.1 Engage in critical and logical thinking about the topic or idea of the theme. Through what readings, assignments, course activities, course goals, topics, and other course components will students engage in critical and logical thinking about the topic or idea of the theme?

The homework (HW) exercises assigned for each topic on a weekly basis are the learning methods used to promote critical thinking skills. Examples of these include 1. A "BPA Perception and Science" HW where students record their personal or professional perceptions of BPA risk to humans and if they are using BPA products in their home. Students are asked to read peer reviewed articles supporting the association between BPA and health outcomes. After they record their risk perceptions, students are required to find 5 "credible" articles refuting this claim. Finally, students are asked if their risk perception changed, because of their research and whether they will change their behavior toward BPA use; 2. A HW where students record personal behaviors that they believe places them at risk for developing cancer. They research the literature to find evidence of biological plausibility that identifies a biophysiological mechanism explaining how their exposure may lead to a health outcome, and then decide if their perception of risks is significant based upon what they learned about the biological plausibility (one of Hill's criteria of causality) of the association between their behavior and the cancer outcome; 3. A HW where students download inspection reports from a local health department of their favorite restaurant, analyze the critical violations (those can cause a food born illness) over a three year period to determine if these violations keep reappearing over time even though they are corrected "at the time of the inspection;" and then decide what is the most hazardous critical violation, and whether they would continue to eat at this restaurant, and 4. A semester long scaffolded Environmental Health Science (EHS) Video Project where student groups will produce a 4 minute long "This is EHS" video on an EHS topic of their choice. Students will need to engage in critical thinking and problem-solving skills to work together as group both inside and outside of class to meet 5 milestones: a project proposal meeting specific metrics, an infographic, a storyboard, a script, and finally to film and edit their video to meet metrics that include bonus points for specific professional cinematic elements.

ELO 1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or idea of the theme. Through what readings, assignments, course activities, course goals, topics, and other course components will students engage in an advanced, in-depth, scholarly exploration about the topic or idea of the theme.

A semester long scaffolded EHS Video Project where student groups will produce a 4 minute long "This is EHS" video on the EHS topic of their choice. Students will need to engage in critical thinking and problem-solving skills to work together as group both inside and outside of class to meet 5 milestones: a project proposal meeting specific metrics, an infographic, a storyboard, a script, and finally to film and edit their video to meet metrics that include bonus points for specific professional cinematic elements. The rubric for each milestone contains a metric that requires that the milestone product be scientifically accurate and credible references must be provided. To achieve this level of accuracy, student must engage in scholarly exploration to meet the metric.

Another assignment requires students to list any confusions or muddy points from their learning activities outside of the classroom. These activities include listening to recorded lectures, reading materials provided, and taking Knowledge Checks. Students are encouraged to undertake their own scholarly exploration to find answers to their questions and confusions. The following instructions are taken from the assignment: "As the course progresses and evolves, so does our approach to the conversations we have in the weekly discussion boards. The purpose of those boards is to allow you the opportunity to reflect on your learning; put simply – to think about how you think. (This is called "metacognition.") As I read through all of the posts (and I do read all of them), I can see how each of you are taking ownership and processing what you are learning. There is a higher expectation in flipped classrooms that students take ownership of their learning. What this means is that by identifying topics/concepts that are still muddy, you should be searching for the answers yourself on the web, as you would in a real-world work environment."

The following is an announcement I made to class requiring credible and science-based reference material: "I am concerned about the frequency of non-scientific statements that are being made in the Reflection Journals. Do not make statements that are not true or are not **supported by an article from the NIH.** I will continue to take of points for spreading "pseudo" or non-science, or uninformed science! Back up your statements such as "this agent will kill you!" I will be checking the science!"

The following is one of objectives for the course: Explain and interpret the scientific justification and proposed causes of climate change and global warming

The following are examples of scholarly credible peer reviewed required learning materials:
Read entire article: Risk Assessment of Growth Hormones and Antimicrobial Residues in Meat
Public Health Effects of Inadequately Managed Stormwater Runoff
Case Study: A massive outbreak of gastroenteritis on a Lake Erie Island
Read Abstract, Section I except B and C; Section II A to H:The Adverse Effects of Environmental Noise Exposure on Oxidative Stress and Cardiovascular Risk (Links to an external site.)

The following topics are that are explored in depth prior to introducing the remaining Environmental Health topics: Environmental Health Epidemiology, Environmental Toxicology

The following are actual quotes from grading the script for the EHS Video Project: 1. "YOU have to make sure there is credible research to back up the statements about health outcomes by googling NIH..." 2. "Do you have a credible reference to back this up? statements that are not backed in science will lose points." 3." too colloquial use more scientific phrases"

The following are actual quotes from grading students' Reflection Journals" 1." You should read the science on fragrances: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7825391" 2. "Check this out...read the acute health effects: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5651468" 3. "need to use toxicological terms for exposure...acute, subacute, sub chronic and chronic"

GOAL 2: GOAL: Successful students will integrate approaches to the theme by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future

ELO2.1 Through what readings, assignments, course activities, course goals, topics, and other course components will students identify, describe, and synthesize approaches or experiences relevant to the topic or idea of the theme in this course?

Homework assignments are the learning methods used that requires students to identify, describe, and synthesize approaches or experiences relevant to the topic or idea of the theme in this course. For example, there is a homework assignment that requires students to engage with the topic of environmental diseases. The instructions for this homework follows:

"This assignment is intended for you to think about your personal behaviors or exposures that may lead to the development of cancer, based upon what you learned from the text Chapter 5 and the reading materials. Based upon the exposure and disease outcome you identify (e.g., eating read meat and colon cancer), For 5 bonus points, I am also asking you to research the literature to determine if there are any references that describes a biophysiological mechanism that provides additional evidence that the epidemiological association identified between your exposure and health outcome is biologically plausible (one of Hill's Criteria of Causality....see Resources). Depending on if you find any such reference after a credible peer reviewed literature search, does your perception of that risk change, and are you still willing to change your behaviors?"

1. **For 6 points:** Make list of **three (3) of your own personal habits** and activities that **YOU PERCEIVE** might enhance your risk of someday developing a malignancy (a cancer health outcome). **If you can't identify 3 personal habits, then identify personal habits that you have observed in other people.** These personal habits and activities assume that you are being exposed to a biological, chemical, or physical agent, such as smoking (containing hazardous chemicals, alcohol consumption, or a sedentary lifestyle (a social determinant of health).
   a.   For each personal habit, include the potential cancer health outcomes.
2. **To earn 5 bonus points (not required): Answer the following questions**:
   a.   For one of your personal habits and activities that might enhance your risk of someday developing a malignancy, answer these questions:
         i.   Has "causation" been scientifically established by, **at a minimum,** a biophysiological mechanism linking your exposure to a health outcome?

1. Provide at least 2 URLs of peer reviewed articles that includes evidence of "causation" between your exposure/behavior and a health outcome, or URLs of a peer reviewed article that states that no "causation," or no strong evidence of "causation" has been found. Use the National Institutes of Health, your health outcome, "biological mechanism," and "Hill's Criteria of Causation" as a search term
   a. As part of this bonus exercise, you will need to study on your own the Hill's Criteria (see Resources below).
1. How does your answer to #2.1.1 affect whether your perception of your exposure and health outcome is significant enough to change your behavior or the behavior of the people you know, i.e., would you feel comfortable asking these people to change their behaviors?
   a. Would you be inclined to change your behaviors/exposures?

ELO 2.2: In what readings, assignments, course activities, course goals, topics, and other course components will students in this course use prior experiences to engage in reflection, self-assessment, and creative work?

This course was designed to engage students in the topics through learning activities and reflections. An example of a creative work that required student groups to use the knowledge from learning materials and lectures to create an infographic on food safety. Here is an example of a group's infographic and below the example are the instructions: https://spark.adobe.com/post/e8E7Qd56WHdze/

CREATING THE INFOGRAPHIC
You can use any tool that you like to create this infographic, but we recommend using an OSU-approved tool such as Adobe Spark Post. Adobe Spark has pre-created templates for you to use, but you need to be careful in your selection of templates to make sure it addresses all the elements in the grading rubric. Some Adobe templates are less visually appealing than others. Adobe does let you **share a Spark page or post, but** you cannot collaborate, simultaneously, in "real-time.
ELEMENTS TO INCLUDE IN INFOGRAPHIC
Include the following food safety elements in your infographic:
1. Safe **cooking temperatures** for the following foods
   a. Rice, vegetables, grains, legumes
   b. Seafood, scrambled eggs served immediately, steaks/chops of veal, beef, pork, lamb
   c. Ground meat
   d. Poultry
2. Safe method for **re-heating** foods including time and temperature
3. Safe method for **cooling foods** including proper time, temperature, proper equipment
4. Safe method for **holding food** using temperature control
5. Safe methods for **food thawing** methods...include two methods
6. Proper refrigerator food storage

The EHS Model Video assignment is an immersive active learning experience designed for students to engage in extremely creative activities. These include designing an infographic and a storyboard of their video, writing a script for their video that includes requirements for: 1. scientific accuracy, 2. videography elements including percentage of video time using narrative voiceovers, graphics, interviewing, and acting in front of the camera, and 3. technical elements including lighting, sound, transitions, shot angle and framing. Bonus points are awarded for meeting 5 professional videography elements such as pace, passion/emotional content, voice, the use of music, and illustrations. Here is an actual storyboard from the assignment:
https://osu.instructure.com/courses/105300/gradebook/speed_grader?assignment_id=2308721&student_id=101996

The weekly Reflection Journals (RJ) assignments are used to engage the students in course topics from the perspective of their own experiences with each topic. Here is an example of a RJ assignment and below the example are the instructions:
https://osu.instructure.com/courses/105300/gradebook/speed_grader?assignment_id=2308703&student_id=541746

Prompts
1. Topic: Introduction to Environmental Health Science
1. Prompt #1: To understand the meaning of Environment Health Science, we first must understand the scope of our environment. Using what you learned about Environmental Health Science from your assigned videos and the class lecture, think about the different environments you experience in your daily lives.
    a. Part 1. List three of those environments
    b. Part 2. For each environment list:
        i. What potentially hazardous physical, biological, or chemical agents could you be exposed to (be specific as possible...not just "chemical" but what chemical).
        ii. Where would this agent go (in your environment) in order to expose you? (air, water, food, soil)
        iii. How would you be exposed? (dermal, ingestion, inhalation, injection)

Instructions
1. Review the prompt question above and draft a response.
2. Create an Adobe Spark Page for your replies to the prompt(s). This Page must capture your response, using text and media elements. This will look very similar to a magazine page, like the one seen here. (Links to an external site.) Your pages must include:
    a. **some text, answering the prompt questions**
    b. **at least one image**. Your images should support your response. Be thoughtful in your search for images; use keywords from your text to search for appropriate images.
        i. can also include screenshots, videos, links, etc.
    c. **When completed, publish your page and submit that URL** in the text box for this assignment.
        i. In the web version of Spark, you can share using the project Share link found on any project in the Projects view and at the top of the page when editing

Specific Expectations for Courses in Sustainability

GOAL 1: Students analyze and explain how social and natural systems function, interact, and evolve over time; how human wellbeing depends on these interactions; how actions have impacts on subsequent generations and societies globally; and how human values, behaviors, and institutions impact multi-faceted, potential solutions across time.

ELO 1.1 Through what readings, assignments, course activities, course goals, topics, and other course components will students describe elements of the fundamental dependence of humans on Earth, its environmental systems, and the resilience of these systems?

This course contains modules on sustainability, resilience, and climate change. Students are introduced to the United Nations Sustainability Development Goals (UNs SDGs) in various modules throughout the course such as Water Resources, Water Pollution, and Ecology, Ecosystems, and Environmental Health, where students are introduced the impact of population growth on ecosystems and climate change. The climate change topic features current and projected data of human's impact on the environment that is associated with changes in our climate. It will become clear to students that there is a fundamental dependence of humans on earth and sustainable environmental systems, and the resilience of these systems.

The most recent report of Intergovernmental Panel on Climate Change, the 6th Assessment Report (AR6) is a featured reading for this topic. This report Sixth Assessment Report of the Intergovernmental Panel on Climate Change, The Physical Science Basis, contains a Summary for Policy Makers that includes sections on The Current State of the Climate and Possible Climate Futures, which should be easily digested by students taking this course. The Current State of the Climate is introduced with the following description: "Since AR5, improvements in observationally based estimates and information from paleoclimate archives provide a comprehensive view of each component of the climate system and its changes to date. New climate model simulations, new analyses, and methods combining multiple lines of evidence lead to improved understanding of human influence on a wider range of climate variables, including weather and climate extremes. The time periods considered throughout this Section depend upon the availability of observational products, paleoclimate archives and peer-reviewed studies." Possible Climate Futures is presented with the following description:" A set of five new illustrative emissions scenarios is considered consistently across this report to explore the climate response to a broader range of greenhouse gas (GHG), land use and air pollutant futures than assessed in AR5. This set of scenarios drives climate model projections of changes in the climate system. These projections account for solar activity and background forcing from volcanoes. Results over the 21st century is provided for the near-term (2021–2040), mid-term (2041–2060) and long-term (2081–2100) relative to 1850–1900, unless otherwise stated."

ELO 1.2 Through what readings, assignments, course activities, course goals, topics, and other course components will students describe, analyze, and critique the roles and impacts of human activity and technology on both human society and the natural world, in the past, currently, and in the future?

This introductory module of the course contains a section on Ecology, Ecosystems, and Environmental Health, that includes learning materials on population dynamics and the impact of growth on ecosystems. The concept of an ecosystem is introduced during the first week of class to broaden the students' view of their environment, even beyond the definition of EHS learned in this same module…beyond the new definition of EHS that captures the social determinants of health. According to the United Nations (UN), an ecosystem includes all living things in a given area, as well as their interactions with each other, and with their non-living environments (weather, earth, sun, soil, climate, atmosphere). Each organism has a role to play and contributes to the health and productivity of the ecosystem as a whole. National Geographic defines a**n ecosystem** as geographic area where plants, animals, and other organisms, as well as weather and landscape, work together to form a bubble of life. Ecosystems contain biotic or living, parts, as well as abiotic factors, or nonliving parts. Biotic factors include plants, animals, and other organisms. Abiotic factors include rocks, temperature, and humidity. An ecosystem approach to the study of EHS is a necessary foundation for students to understand the effects of human induced climate change. As the global population of humans grow, we have taken over our ecosystem (the earth), instead of respecting it, which is paramount to a sustainable life on this planet. The study of the impact of growth on ecosystems and population dynamics helps students understand how population growth in developing and developed countries impacts both our ecosystem and our climate. The lecture on Sustainability and Health includes the following statement for students to reflect upon: "Linda Coombs, Wampanoag Historian: How people lived and moved within their area — whether it was a village area or their nation's area — in a village area, they had places where they summered; wintered; fields laying fallow; places where they had hunting camps; where they went fishing; where they went burying; where they got this plant or that plant. And, you know, the myth that we didn't use the land — **We didn't just use it, we had a relationship with it. And it was a relationship that allowed the land to be what it was. And we could take what we needed, but it didn't deplete it, it didn't destroy it. We had a relationship with the land, we weren't the masters of the land."**

ELO 1.3 Through what readings, assignments, course activities, course goals, topics, and other course components will students use appropriate evidence and an explicit statement of values to devise informed and meaningful responses to problems and arguments in sustainability?

The last slide of the Sustainability and Health lecture includes webpages for students who want to join the sustainability movement and some challenges for them as they review the appropriate evidence and values regarding sustainability: **Describe sustainability in the context of the importance to our daily lives**

https://www.un.org/sustainabledevelopment/takeaction/
https://ohiostatebuckeyes.com/sustainability/goals/
https://www.policymattersohio.org/research-policy/sustainable-communities/local-sustainability/a-green-new-deal-10-ways-to-promote-a-sustainable-ohio
Reach your own conclusions about the importance of sustainability: local, state, nation, internationally and globally.
- o Listen to both sides of the issue
- o Research the truth for yourself
    - ▪ Be careful where you get your information on both sides of the issue
- o Reach a conclusion as a scientist
- o Let that conclusion guide you personally
- o It's not all about you, no matter what side of the issue you fall on
- o https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6210172/
- o Take action individually or in your community, develop a professional passion
- o Take action for future generations of people who mean anything to you