

**Course Title: Introduction to Environmental Health,
Spring 2023**

- Course Number:** PHCO 0503-Web, Asynchronous
- Course Prerequisite(s):** None
- Course Instructor:** Jun-Yan Hong, PhD, Professor, Department of Environmental and Occupational Health and Justice, 848-445-6146;
hongju@sph.rutgers.edu; <https://rutgers.webex.com/meet/hongju>
- Office Hours:** 9am to 5pm. Students may schedule individual meetings on Monday and Wednesday by phone or WebEx. Appointment is required.
- Course Assistant:** Yvette Way (ynw5@sph.rutgers.edu), Rutgers School of Public Health
- Course Website:** canvas.rutgers.edu
- Required Course Text:** Howard Frumkin (2016), Environmental Health: From Global to Local, published by Jossey-Bass, ISBN 978-1-118-98476-5

Additional/Supplemental Readings/Resources: See Course Schedule

Course Description: We will explore ways in which environments can and do affect health. We will examine how ecosystems provide goods and services that support life and health, and how natural and human activity can lead to harm from biological, chemical, physical, and radiological agents in air, water, soil, food, homes, and workplaces. We will apply multidisciplinary concepts and analysis from ecology, toxicology, epidemiology, and behavioral science. We will review policies intended to improve public health by altering or maintaining environments.

Minimum Grade Requirement for Select Prerequisite Courses

PHCO 0503 Introduction to Environmental Health serves as a prerequisite course for ENOH 0656 Environmental Risk Assessment. ENOH 0656 requires not only completion of PHCO 0503 but also requires a minimum grade of "B" or better in PHCO 0503. Students who have completed PHCO 0503 with the required minimum grade will be allowed to register for ENOH 0656. Students who have completed PHCO 0503 with a grade less than the required minimum grade should review the [Minimum Grade Requirement for Select Prerequisite Courses Policy](https://sph.rutgers.edu/academics/assets/docs/PolicyPrereqMinimumGradeRequirement.pdf) (<https://sph.rutgers.edu/academics/assets/docs/PolicyPrereqMinimumGradeRequirement.pdf>) for more information.

Competencies Addressed: The competencies addressed in this course include:

- Identify the core functions of public health and the 10 Essential Services;
- Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues;
- Explain effects of environmental factors on a population's health;

- Explain an ecological perspective on the connections among human health, animal health and ecosystem health;
- Specify current environmental risk assessment methods;
- Explain the general mechanisms of toxicity associated with various environmental exposures;
- Specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety;
- Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents;
- Describe physiologic, social and psychological factors that affect susceptibility and vulnerability to adverse health outcomes following exposure to environmental hazards;
- Explain biological and genetic factors that affect a population's health;
- Discuss various risk management and risk communication approaches in relation to issues of environmental justice and equity; and
- Explain how globalization affects global burdens of disease.

Course Objectives: By the completion of this course, students will be able to:

- Describe the spectrum of environmental and occupational health problems
- Characterize target populations exposed to hazardous agents, and susceptibility and vulnerability factors
- Describe the tools that are used to analyze health impacts of environmental exposures, such as the risk assessment process, epidemiology, and industrial hygiene
- Describe the main methods used to control health hazards, such as reducing or preventing exposure
- Describe the existing regulatory framework for controlling environmental and occupational agents

Course Communication: The instructor will communicate with students primarily through emails. If you have a question that you feel may help other students as well, please post your question in the "Class Help: Ask A Question" discussion thread. If you have a personal concern or question you would like to talk about, please email the instructor directly or attend office hours. During the work week, the instructor will aim to respond to personal emails or your posts directed to the instructor within 48 hours. For communications posted/emailed over the weekend, the instructor will try to respond by the end of the business day on Tuesday for most situations. If the instructor is out of town without Internet access, the instructor will post a note in Canvas in Announcements. The goal will be to post grades within seven days of the final due date of the assignment, unless otherwise stated.

Fostering Course Community: The instructor will work to foster community through discussion boards, online activities, etc. Students are encouraged to get to know each other and contribute their particular strengths, expertise, and experience to enrich the class. Working with your classmates, explaining concepts to each other, and interacting with your instructor (and course

assistant, if assigned) are the most effective ways to understand the course concepts and succeed in this course. By posting questions on Canvas, the entire class has the benefit of learning from the discussions, so please consider posting your question as a first option.

Canvas Announcements: This course will use Announcements in Canvas to share course information, highlight lessons learned, and send reminders. Be sure you review your notification settings in Canvas so that you receive these Announcements using your preferred contact method. In addition, please be sure to check the Announcements tab at least once each week in the Canvas shell for this course.

Module Schedule: All course deadlines are listed in Eastern Time Zone. Canvas will record all deadlines in this time zone. If you are in a different time zone, plan accordingly. Each week will begin on a Tuesday and will end on Tuesday. In order to complete all of the module assignments, you should plan to spend approximately 9 hours per week on the course material for a total of approximately 145 hours of course-related activities (discussion boards, assignments, papers, readings, etc).

Discussion Board Guidelines and Expectations: Discussion prompts will be posted on Canvas weekly. You will utilize readings, videos and other information to inform and engage in the discussion boards each week. Respect, critical thinking and application of knowledge will guide these discussions. Original posts for Weekly Discussions and response to other posts are due by the date/time listed in each module. The instructions and expectations for the Discussion Board, including a rubric, are posted on Canvas.

Course Requirements and Grading:

Students are required to

- Post to and read weekly discussion board for current topic chapters/articles and questions;
- Complete homework assignment/quiz independently;
- Submit homework assignments on **Tuesday, March 7, 2023 (homework assignment 1) and on Tuesday, May 2, 2023 (homework assignment 2).** Both are due by 11:59 pm on the submission date;
- **Actively participate in discussions and respond to a minimum of two other posters under the same topic each week.**

The assessments will include weekly quizzes and discussions (online and in classroom) and timely submission of two homework assignment papers.

Both module-specific quizzes and discussion topics will be released on Canvas together with corresponding modules. Students should submit independent response to discussion topics first then respond to at least two other posters to get full points. Online quizzes will be close book and open for a limited amount of time (usually 1 hour). Students should get ready before they open the quizzes. The answers to quizzes, same as module-specific discussions, are due by 11:59 pm on the submission date.

- **Final grades** will be based on total average weighted percentage shown below:

Quizzes	30%
Discussions	30%
Homework Assignments	40%

Grading Policy:	94 – 100	A
	90 – <94	A-
	87 – <90	B+
	84 – <87	B
	80 – <84	B-
	77 – <80	C+
	70 – <77	C
	<70	F

Course Schedule: Schedule and Topics (including linked competencies and assessment)

DATE	TOPIC(S) and REQUIRED READINGS from Frumkin (2016), 3 rd Edition
01/17/23, Tue Module 1	<p>Course Basics and Introduction to Environmental Health (Ch. 1)</p> <ul style="list-style-type: none"> • Linked competency: Identify the core functions of public health and the 10 Essential Services; Explain effects of environmental factors on a population’s health; Explain how globalization affects global burdens of disease • Assessment: Quizzes and Discussions (N/A)
01/24/23, Tue Module 2	<p>Ecology and Ecosystems / Sustainability (Ch. 2, 3)</p> <ul style="list-style-type: none"> • Linked competency: Explain effects of environmental factors on a population’s health; Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents; Explain an ecological perspective on the connections among human health, animal health and ecosystem health; Explain how globalization affects global burdens of disease • Assessment: Quizzes and Discussions (due by Tue, January 31, 11:59pm)

<p>01/31/23, Tue Module 3</p>	<p>Environmental and Occupational Epidemiology / Geospatial Analysis (Ch. 4, 5)</p> <ul style="list-style-type: none"> • Linked competency: Identify the core functions of public health and the 10 Essential Services; Explain effects of environmental factors on a population’s health; Specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety • Assessment: Quizzes and Discussions (due by Tue, February 7, 11:59pm)
<p>02/07/23, Tue Module 4</p>	<p>Toxicology / Exposure Science and Industrial Hygiene (Ch. 6, 8)</p> <ul style="list-style-type: none"> • Linked competency: Explain effects of environmental factors on a population’s health; Explain the general mechanisms of toxicity in eliciting a toxic response to various environmental exposures; Specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety; Specify current environmental risk assessment methods; Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents; Describe generic, physiological and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards; Explain biological and genetic factors that affect a population’s health • Assessment: Quizzes and Discussions (due by Tue, February 14, 11:59pm)
<p>02/14/23, Tue Module 5</p>	<p>Food Systems / Pest Control and Pesticides (Ch. 19, 18)</p> <ul style="list-style-type: none"> • Linked competency: Identify the core functions of public health and the 10 Essential Services; Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents; Specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety; Explain how globalization affects global burdens of disease • Assessment: Quizzes and Discussions (due by Tue, February 21, 11:59pm)

<p>02/21/23, Tue Module 6</p>	<p>Energy and Health / Air Pollution (Ch. 14, 13)</p> <ul style="list-style-type: none"> • Linked competency: Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents; Specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety; Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues; Explain how globalization affects global burdens of disease • Assessment: Quizzes and Discussions (due by Tue, February 28, 11:59pm)
<p>02/28/23, Tue Module 7</p>	<p>Water and Health / Solid and Hazardous Waste (Ch. 16, 17)</p> <ul style="list-style-type: none"> • Linked competency: Identify the core functions of public health and the 10 Essential Services; Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents; Specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety; Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues • Assessment: Quizzes and Discussions (due by Tue, March 7, 11:59pm) <p>Homework assignment 1 (3 pages, due by 11:59 pm on Tue, March 7, 2023)</p>
<p>03/07/23, Tue Module 8</p>	<p>Healthy Communities / Buildings and Health (Ch. 15, 20)</p> <ul style="list-style-type: none"> • Linked competency: Identify the core functions of public health and the 10 Essential Services; Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents; Specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety • Assessment: Quizzes and Discussions (due by Tue, March 21, 11:59pm)

<p>03/21/23, Tue Module 9</p>	<p>Climate Change (Ch. 12)</p> <ul style="list-style-type: none"> • Linked competency: Identify the core functions of public health and the 10 Essential Services; Explain effects of environmental factors on a population’s health; Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents; Specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety; Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues; Discuss various risk management and risk communication approaches in relation to issues of environmental justice and equity; Explain how globalization affects global burdens of disease • Assessment: Quizzes and Discussions (due by Tue, March 28, 11:59pm)
<p>03/28/23, Tue Module 10</p>	<p>Work and Health (Ch. 21)</p> <ul style="list-style-type: none"> • Linked competency: Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents; Specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety; Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues; Discuss various risk management and risk communication approaches in relation to issues of environmental justice and equity; Explain how globalization affects global burdens of disease • Assessment: Quizzes and Discussions (due by Tue, April 4, 11:59pm)
<p>04/04/23, Tue Module 11</p>	<p>Injuries / Environmental Disasters (Ch. 23, 24)</p> <ul style="list-style-type: none"> • Linked competency: Identify the core functions of public health and the 10 Essential Services; Explain effects of environmental factors on a population’s health; Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents; Specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety; Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues • Assessment: Quizzes and Discussions (due by Tue, April 11, 11:59pm)

<p>04/11/23, Tue Module 12</p>	<p>Risk Assessment / Communicating Environmental Health (Ch. 27, 28)</p> <ul style="list-style-type: none"> • Linked competency: Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents; Specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety; Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues; Discuss various risk management and risk communication approaches in relation to issues of environmental justice and equity • Assessment: Quizzes and Discussions (due by Tue, April 18, 11:59pm)
<p>04/18/23, Tue Module 13</p>	<p>Ethics / Environmental Justice (Ch. 10, 11)</p> <ul style="list-style-type: none"> • Linked competency: Describe generic, physiological and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards; Discuss various risk management and risk communication approaches in relation to issues of environmental justice and equity; Explain how globalization affects global burdens of disease • Assessment: Quizzes and Discussions (due by Tue, April 25, 11:59pm)
<p>04/25/23, Tue Module 14</p>	<p>Radiation (Ch. 22)</p> <ul style="list-style-type: none"> • Linked competency: Explain effects of environmental factors on a population's health; Explain the general mechanisms of toxicity in eliciting a toxic response to various environmental exposures; Specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety; Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents; Describe generic, physiological and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards; Explain biological and genetic factors that affect a population's health • Assessment: Quizzes and Discussions (due by Tue, May 2, 11:59pm) Homework assignment 2 (3 pages, due by 11:59 pm on Tue, May 2, 2023)

<p>05/02/23, Tue Module 15</p>	<p>Wrap-up with Student Discussions</p> <p>Every student will prepare and submit 3 slides on the following:</p> <ol style="list-style-type: none"> 1. List five (5) major environmental health issues in your mind and your proposed solutions. 2. How this course help you to address these issues? 3. How to improve this course? <p>Assessment: PPT submission (due by May 6, 11:59pm)</p>
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Learning Management System: Canvas will be used throughout the semester for course syllabus, assignments, announcements, communication and/or other course-related activities. It is the student's responsibility to familiarize themselves with Canvas and check it regularly. If you have difficulties accessing Canvas, please inform the instructor and Canvas Support (help@oit.rutgers.edu). Canvas is accessible at canvas.rutgers.edu.

School of Public Health Honor Code: The School of Public Health Honor Code is found in the School Catalog (sph.rutgers.edu/academics/catalog.html). Each student bears a fundamental responsibility for maintaining academic integrity and intellectual honesty in his or her graduate work. For example, all students are expected to observe the generally accepted principles of scholarly work, to submit their own rather than another's work, to refrain from falsifying data, and to refrain from receiving and/or giving aid on examinations or other assigned work requiring independent effort. In submitting written material, the writer takes full responsibility for the work as a whole and implies that, except as properly noted by use of quotation marks, footnotes, etc., both the ideas and the works used are his or her own. In addition to maintaining personal academic integrity, each student is expected to contribute to the academic integrity of the School community by not facilitating inappropriate use of her/his own work by others and by reporting acts of academic dishonesty by others to an appropriate school authority. It should be clearly understood that plagiarism, cheating, or other forms of academic dishonesty will not be tolerated and can lead to sanctions up to and including separation from the Rutgers School of Public Health.

Students with Disabilities: Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student must apply for Services by first completing a Registration Form with the Rutgers Office of Disability Services (ODS) at ods.rutgers.edu. The student will also be required to participate in an ODS intake interview and provide documentation. If reasonable accommodations are granted, ODS will provide you with a Letter of Accommodations which should be shared with your instructors as early in your courses as possible.

Commitment to Safe Learning Environment: The Rutgers School of Public Health is committed to helping create a safe learning environment for all students and for the School as a whole. Free expression in an academic community is essential to the mission of providing the highest caliber of education possible. The School encourages civil discourse, reasoned thought, sustained discussion, and constructive engagement. Provocative ideas respectfully presented are an expected result. An enlightened academic community, however, connects freedom with responsibility. The School encourages all students to disclose any situations where you may feel unsafe, discriminated against, or harassed. Harassment or discrimination of any kind will be not tolerated and violations may lead to disciplinary actions.

Student Well-Being: The School of Public Health recognizes that students may experience stressors or challenges that can impact both their academic experience and their personal well-being. If the source of

your stressors or challenges is academic, students are encouraged to discuss these challenges and circumstances with their instructor, if they feel they may need additional support or temporary accommodations at the beginning or during this course. The course instructor may consider making reasonable temporary adjustments depending on the student's situation. For personal concerns or if additional support is needed, students may reach out to the [Office of Student Affairs](#) or any of the appropriate referral resources listed on the [SPH Student Connect](#) Canvas page.

Reporting Discrimination or Harassment: If you experience any form of gender or sex-based discrimination or harassment, including sexual assault, sexual harassment, relationship violence, or stalking, know that help and support are available. You may report such incidents to the [RBHS Title IX Office](#) or to the School of Public Health's [Office of Student Affairs](#). Rutgers University has staff members trained to support survivors in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, and more. If you experience any other form of discrimination or harassment, including racial, ethnic, religious, political, or academic, please report any such incidents to the School's [Office of Student Affairs](#). The School strongly encourages all students to report any incidents of discrimination or harassment to the School. Please be aware that all Rutgers employees (other than those designated as confidential resources such as advocates, counselors, clergy and healthcare providers as listed in Appendix A to [Policy 10.3.12](#)) are required to report information about such discrimination and harassment to the School and potentially the University. For example, if you tell a faculty or staff member about a situation of sexual harassment or sexual violence, or other related misconduct, the faculty or staff member must share that information with the [RBHS Title IX Coordinator](#). If you wish to speak to a confidential employee who does not have this reporting responsibility, you can find a list of resources in Appendix A to University [Policy 10.3.12](#). For more information about your options at Rutgers, please visit [Rutgers Violence Prevention and Victim Assistance](#).

Overview of School Policies: Academic and non-academic policies and procedures, such as Auditing a Course, Retaking Courses, Grade Grievance and others that cover registration, courses and grading, academic standing and progress, student rights and responsibilities, graduation and more may be found under [Policies](#) on the School of Public Health website. Below are select specific policies; however, students are responsible for keeping informed about academic and non-academic policies and procedures beyond those noted on this syllabus.

Graduate Student Computer Policy: Students are required to possess a personal laptop, no older than approximately two years, that must meet minimum requirements which may be found online at: sph.rutgers.edu/student-life/computer-support.html

Policy Concerning Use of Recording Devices and Other Electronic Communications Systems: When personally owned communication/recording devices are used by students to record lectures and/or classroom lessons, such use must be authorized by the faculty member or instructor who must give either oral or written permission prior to the start of the semester and identify restrictions, if any, on the use of mobile communications or recording devices.

Policy Concerning Use of Turnitin: Students agree that by taking this course all required papers may be subject to submission for textual similarity review to Turnitin.com (directly or via learning management system, i.e. Canvas) for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Usage Policy posted on the Turnitin.com site. Students who do not agree should contact the course instructor immediately.

Withdrawal/Refund Schedule: Students who stop attending their course(s) without submitting a completed [Add/Drop Course](#) form will receive a failing grade. Furthermore, students dropping to zero credits for the semester are considered withdrawn and must submit a completed [Leave of Absence](#) form from the School of Public Health's Office of Student Affairs. The School of Public Health refunds tuition only. Administrative and technology fees are non-refundable. You may find the Withdrawal/Refund

Schedule on the School of Public Health website at:
sph.rutgers.edu/academics/academic-calendar.html