

Course Title: *Environmental and Occupational Epidemiology*

Course Number: *EPID 0650, EPID 0750*

Course Pre- and Co-requisite(s): ***For master level students** Principles and Methods of Epidemiology PHCO 502*

***For doctoral level students** Introduction to Environmental Health PHCO 503 and Intermediate Epidemiology EPID 656; OR Permission of Instructor*

Course Location: *School of Public Health Room 234*

Course Date & Time: *Tuesdays 6-8p in person*

Course Instructor: *Zorimar Rivera-Núñez, PhD, MS, Assistant Professor, Rutgers School of Public Health, Department of Biostatistics and Epidemiology, Environmental and Occupational Health Sciences Institute (EOHSI) Room 316, zorimar.nunez@rutgers.edu*

Office Hours: *By Appointment Only*

Course Assistant: *N/A*

Course Website: canvas.rutgers.edu

Required Course Text: *Epidemiology: Beyond The Basics 4th edition Book author: Moyses Szklo and F. Javier Nieto ISBN number: ISBN-13: 978-0763729271 ISBN-10: 0763729272 Available through: <https://www.libraries.rutgers.edu/>*

Additional/Supplemental Readings/Resources: *Assigned and complementary readings, and resources will be available weekly in Canvas*

Course Description: Environmental and Occupational Epidemiology is an intermediate level course designed to familiarize students with the major and emerging concepts in environmental and occupational epidemiology as well as with the design, conduct, and interpretation of results from environmental and occupational epidemiology studies. Students will become familiar with specific environmental and occupational research areas, as well as the unique epidemiologic or exposure methodologies used in those studies. Students will be asked to analyze, evaluate, summarize, and present data and published studies used to investigate health effects related to environmental and occupational exposures.

Selected Concentration Competencies Addressed:

- A. Critique epidemiologic literature, assess its strengths and weaknesses and determine if conclusions(s) are supported;
- B. Conduct independent epidemiologic literature reviews and summarize studies using qualitative and quantitative techniques;
- C. Formulate specific hypotheses and determine an appropriate study design and analysis plan using quantitative data analysis techniques;

- D. Appropriately analyze and interpret epidemiologic data, including data from large national and state level datasets;
- E. Design, implement and assess ordinary data collection systems for public health research, including quality control for data entry;
- F. Develop skills to effectively work on multidisciplinary teams, including scientists and non-scientists;
- G. Communicate and present study findings to professional audiences;
- H. Anticipate and follow Institutional Review Board expectations and requirements

Please visit the Concentration webpages on the School of Public Health's website at sph.rutgers.edu for additional competencies addressed by this course for other degrees and concentrations.

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

- a. Identify epidemiologic study designs and basic statistical analysis methods used in environmental and occupational epidemiology
- b. Apply knowledge of epidemiologic principles, including confounding, bias, measurement, and random error, to understanding the strengths and weaknesses of environmental and occupational epidemiology studies.
- c. Develop a familiarity with some of the primary environmental and occupational exposures and health effects and understand how to assess their importance.
- d. Critically evaluate articles in the environmental and occupational epidemiology literature, identify gaps in research, and obtain experience in literature review and proposal preparation.
- e. Gain experience in reviewing the literature around a specific question, collaborating with peers, and presenting a study proposal to respond to gaps in the scientific literature.

Competency	Course Objectives	Week	Assessment(s)
A	a, b, d	4,10	Journal Club; Mid-Term Class Project
B	a, b, c	2,3,4,9	Journal Club; Mid-Term Class Project
C	b, d	2-15	Class Project
D	b	4,10	Online Exercises
E	b, c, d	2-15	Online Exercises
F	e	2,3,10,11	Journal Club; Class Project
G	e	2,4,10	Class Project
H	a, c	11	Online Exercises

Course Requirements and Grading:

A. Grading	
1. <i>Mid-Term Exam</i>	20 %
2. <i>Class Project Part 1: DAG and Aims</i>	20 %
3. <i>Class Project Part 2: Study Design & Report Back</i>	20%
4. <i>Class Project: Report Back Presentation</i>	10%
5. <i>Journal Club & Web-Based Discussion</i>	20 %
6. <i>Class Participation</i>	<u>10 %</u>
<i>Total:</i>	100%

B. School-wide Uniform Grading Scale:

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

- C. **Class Project:** the class project consist of two parts: (1) DAG and Aims (2) Study Design and Report Back. The written final project should be about 2,000 words (8-pages doubled spaced) for master students and 4,000 words (15-pages doubled spaced) for doctoral students excluding references and tables/figures/appendices. Specific instructions and rubrics will be provided during the semester. This is an individual project.
- D. **Journal Club:** Students will read and critique epidemiological studies, and discuss them in class. Master level students will pair to present a single assigned environmental or occupational epidemiology study. Doctoral levels students will work individually. During Week 1, students will learn and practice how to review a scientific article. This exercise will prepare them for journal club dates. Instructions and rubrics for scientific review will be provided on Week 1. These are group projects.
- E. **Web-Based Discussion:** Web-based activities and homework include weekly online-30 material and other application exercises. Specific instructions will be available for each online discussion every week immediately after class. Students will have one full week (until the next class) to complete discussions unless otherwise stated. Doctoral students should be prepared to lead discussion from online activities during in-person class.
- F. **Attendance and Class Participation:** Students are expected to attend class in person on Tuesdays from 6:00-8:00 pm, as well as to complete up to 30-minutes of additional web-based activities. Active participation in both, lecture and web-based activities, is required. All assignment have due dates and are expected to be submitted as established in this syllabus. When needed, additional deadlines will be provided through the semester. Participation should focus on quality versus quantity. For maximum points, students should do the following:

- a. Maximize attendance
- b. Lead or significantly contribute to discussions in class or through Canvas.
- c. Complete class course mid- and final evaluations.

Course Canvas Site: The course Canvas site can be found after logging in to <http://Canvas.rutgers.edu/>. Please test your access to the site as soon as possible. **Important course materials will be posted there including lectures and class assignments.** If you cannot access the site, let Dr. Rivera-Núñez ***know as soon as possible***. There are training materials available to help you with Canvas and can be accessed from your Canvas homepage or you can reach out to Canvashelp@ca.rutgers.edu for assistance.

Course Schedule: *Includes week by week listing of each class session:*

Week	Date	Topic	Lecturer	Web-Based Activity	Due
1	1/17	Introduction: Review of Study Design	Rivera-Núñez	Practice Critique for Reviewing Journal Article	1/24
2	1/24	Analytical Epidemiology: Causal Models and Fundamentals	Rivera-Núñez	Selection Exposure/Outcome: Canvas Homework section	1/31
3	1/31	Exposure Assessment	Rivera-Núñez	Asbestos fiber dimensions and respiratory disease risk Prep Article Discussion	2/7
4	2/7	Journal Club: Biomarkers & Study Design	Rivera-Núñez	PFAS in NJ	2/14
5	2/14	Water Pollution	Rivera-Núñez	Air Pollution Prep	2/21
6	2/21	Air Pollution	Rivera-González	NJDOH Webpage	2/28
7	2/28	Surveillance	Goun	No Web-based Activity, prep for the Mid-Term	-
8	3/7	Mid-Term	Rivera-Núñez	WTC Health Program Class Project Part 1	3/21
	3/14	Spring Break			
9	3/21	Occupational WTC	Graber	Clusters Prep Article Discussion	3/28
10	3/28	Journal Club: Neighborhoods		This is Bill Class Project Part 1	4/4
11	4/4	Environmental Justice	Fiedler	Hurricanes & EJ	4/11
12	4/11	Endocrine Disruptors	Barrett	Phthalates	4/18
13	4/18	Climate Change	Cedeño Laurent	TBD	4/25
14	4/25	Chemical Mixtures Methods	Aung	Class Project Part 2	5/2
15	5/2	Proposal Presentations			

Learning Management System: Canvas will be used extensively 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@canvas.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