

Course Title: Reproductive and Perinatal Epidemiology

Course Number: EPID 0607

Course Pre- and Co-requisite(s): *PHCO502*

Course Location: Room 334, School of Public Health Building, 683 Hoes Lane West, Piscataway -and- Room 1022, 1 RFP, Newark

Course Date & Time: Tuesday, 6:00pm to 8:00pm

Course Instructor: Emily Barrett, PhD
Associate Professor, Department of Biostatistics and Epidemiology,
Rutgers School of Public Health
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Office Hours: By Appointment Only

Course Assistant: Ashley Grenger (ag1561@sph.rutgers.edu)

Course Website: 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 quizzes, readings, and blog.** Make sure that Canvas sends you notifications to an e-mail address you check regularly. If you cannot access the site, let Dr. Barrett **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 help@canvas.rutgers.edu for assistance. If you can upload a photo of yourself to Canvas, it is extremely helpful for learning names!

This year, we are also using Nearpod (www.nearpod.com) for the first time as classroom tool to facilitate engagement. Please bring your laptop/tablet/phone- more instructions will be provided on how to use the site in class.

Required Course Text: *Reproductive and Perinatal Epidemiology* (2011) Germaine Buck Louis and Robert Platt (eds). Oxford University Press: New York. ISBN: 978-0-19-538790-2.

Additional/Supplemental Readings/Resources: Additional Readings will be assigned throughout the semester and will be provided on the course website.

Course Description: This course is a survey of major topics in reproductive and perinatal epidemiology from fertility to early childhood outcomes. This course focuses on methodological issues in studying reproductive and perinatal outcomes using epidemiologic study designs, while incorporating life course perspectives. The course also critically reviews the literature on major reproductive and perinatal outcomes and considers current debates in the literature.

Selected Concentration Competencies Addressed: Each Concentration identifies competencies for each degree offered. The competencies addressed in this course for the MPH for the Department of Epidemiology include:

- 1) Critique epidemiologic literature, assess its strengths and weaknesses, and determine if conclusion(s) are supported
- 2) Formulate a specific hypothesis and determine an appropriate study design and analysis plan
- 3) Appropriately analyze and interpret epidemiologic data, including large national and state level datasets
- 4) Communicate and present study findings to professional audiences

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:

- 1) Be familiar with the physiology of various reproductive and perinatal health outcomes
- 2) Understand unique methodological issues in studying reproduction
- 3) Recognize statistical models frequently used in reproductive and perinatal epidemiology
- 4) Engage in debate on current issues in reproductive health
- 5) Write and present a critical epidemiologic literature review

Competency	Course Objectives(s)	Week	Assessment(s)
1	2, 3, 4, 5	All weeks	Literature review assignment; weekly class discussions
2	1, 2, 3	1, 2, 15, 16	Research proposal; classroom activities
3	1	10	Online activity
4	1, 2, 3	15, 16	Group presentation

General expectations:

- For 3 graduate school credit hours, NJ requires 2.5 hours of classroom contact time, at SPH we divide this into 2 hours in the classroom and 30 minutes doing other class activities called the “online 30”
- At SPH, we expect that you spend 2-3 hours studying/preparing for every 1 credit hour in class. For this class that means up to 9 hours per week.

Course Requirements and Grading:

Your grade is based on multiple assignments and evaluations as described below. All assignments should be uploaded to Canvas no later than the start of class (6 pm) on the day they are due; you will not be able to upload assignments after that time. Concepts and material from weekly assignments will be reviewed in class on the due date, therefore late assignments will not be accepted. For the longer written assignments (“In the News”, literature review, and

research proposal), you will lose 10% credit for each day late. If you are having issues related to your computer/internet/Canvas, you may hand a hard copy of your assignment to Dr. Barrett by the start of class on the due date.

10% Class contribution: Class participation is essential in this course and there are many ways you can actively contribute. You can ask or answer a question. You can be an active listener which includes taking notes, engaging with the speaker, responding to the instructor or a classmate's contributions, or making a verbal connection between the instructors and/or classmates' contributions. You are expected to actively and verbally participate in EVERY class. See class participation rubric for more details.

10% Homework reading quizzes: Short quizzes will be given most weeks through Canvas and must be completed prior to that week's class. You will have 2 chances to submit your answers, so you can correct your errors (if any). However you will not receive information on which questions are wrong- you will need to figure that out yourself through careful reading. The highest score out of the 2 tries will be counted.

15% "Online 30": To supplement our two hours of in-class time each week, there is an additional mandatory, out-of-class activity that should take you approximately 30 minutes to complete. The activity will vary from week to week but could include participating in a class discussion board, watching an assigned video or lecture, or evaluating a recent article. These activities are in the syllabus and posted on Canvas. These activities are in addition to any homework or readings due that week.

10% Reproductive and Perinatal Epidemiology in the news: As you take this course, you'll start to notice Reproductive and Perinatal Epidemiology stories in the popular press. With an assigned partner, you will find a relevant news story from the past 2 years, then find the original scientific article it references. Together, you will write a ~3 page summary of the scientific article and how it was covered in the popular press. Alternatively, you can record a ~5 minute video or "podcast" instead of the written assignment, but the content should be similar. More detailed instructions will be provided.

30% Literature review:

Over the course of the semester, each student will work individually on a critical literature review addressing an important topic of their choice in reproductive or perinatal epidemiology. The literature review has two parts.

Literature review proposal (5%): Each student will submit a 1-page proposal specifying a specific exposure-outcome relationship that they would like to study.

Literature review paper (25%): Each student will write a paper 8-10 pages in length on the topic of their proposal (after approval by Dr. Barrett), not including references, tables, or graphs.

25% Research proposal (group presentation): You will be assigned a group of 2-4 people (depending on class size). As a group, you will choose the topic of one of your literature reviews to further develop into a research proposal. You will prepare a ~20 minute presentation on your proposed project (plus 5 minutes of Q and A) as well as a “Specific Aims” page (1 page) summarizing your proposal.

The literature review proposal, literature review paper, and specific aims page should be double-spaced with 1-inch margins and 11 point font. References must be formatted according to the American Journal of Epidemiology style. Sections are should be uploaded to Canvas before class on the day they are due and late papers will not be accepted. For each of these assignments, more details will be provided in class.

Course Schedule: This is a general schedule and is subject to change/updates as needed throughout the semester. Please attend class and check the Canvas site weekly for updates.

This class adheres to the school-wide uniform grading scale:

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:

1/21/20

Week 1: Introduction to reproductive and perinatal epidemiology (Barrett in Piscataway)

Assigned readings:

- Louis and Platt, Chapter 1
- Nguyen RH and Wilcox AJ. (2005) Terms in reproductive and perinatal epidemiology: 1. Reproductive Terms. *J Epidemiology and Community Health*. 59:916-919
- Nguyen RH and Wilcox AJ. (2005) Terms in reproductive and perinatal epidemiology: 2. Perinatal Terms. *J Epidemiology and Community Health*. 59:1019-1021.

“Online 30” (complete prior to class): Literature review tools

1/28/20

Week 2: Female reproductive health and fertility (Barrett in Newark)

Due before class: Week 2 quiz (Canvas)

Assigned readings:

- Louis and Platt Chapters 2, 3, & 4

“Online 30” (complete prior to class): Using technology to understand women’s reproductive health (Canvas)

2/4/20

Week 3: Pregnancy and Pregnancy Loss (Barrett in Piscataway)

Due before class: Week 3 quiz (Canvas)

Assigned readings:

- Wilcox Chapters 10 & 11
- Gaskins et al (2016) Pre-pregnancy caffeine and caffeinated beverage intake and risk of spontaneous abortion. *Eur J Nutr*. [epub ahead of print]
- Gianelli et al (2003) The effect of caffeine consumption and nausea on the risk of miscarriage. *Paediatr Perinat Epidemiol* 17(4): 316-23.

“Online 30” (complete prior to class): Quiz your classmates (canvas)

2/11/20

Week 4: Preterm birth (Guest lecture: Zorimar Rivera-Nunez, PhD; Rutgers University, CINJ; Barrett in Newark)

Due before class: **“Reproductive and Perinatal Epi in the news” assignment**

Assigned readings:

- Louis and Platt Chapter 8.
- Picklesimer AH et al. (2012) The effect of CenteringPregnancy group prenatal care on preterm birth in a low-income population. *Am J Obstet Gynecol*; 206:415.e1-415.e7.
- Devitt (2013) Does the CenteringPregnancy Group Prenatal Care Program Reduce Preterm Birth? The conclusions are premature. *Birth Issues in Perinatal Care* 40(1): 67-69.

“Online 30” (complete prior to class): Politics and preterm birth discussion board (Canvas)

2/18/20

Week 5: Epigenetics in Perinatal and Pediatric Epidemiology (Guest lecture: Stephanie Shiau, PhD, Rutgers School of Public Health)

Due before class: Week 5 quiz (canvas)

Assigned readings:

- Waterland and Michels (2007) Epigenetic Epidemiology of the Developmental Origins Hypothesis. *Annu. Rev. Nutr.* 27: 363-88.
- Shiau et al. (2019) Distinct epigenetic profiles in children with perinatally-acquired HIV on antiretroviral therapy. *Scientific Reports.* 9: 10495.
- Tobi et al. (2018) DNA methylation as a mediator of the association between prenatal adversity and risk factors for metabolic disease in adulthood. *Science Advances.* 4: eaao4364.

"Online 30" (complete prior to class): Epigenetics for laypeople

2/25/20

Week 6: Birth defects (Guest lecture: Elizabeth Marshall, PhD, Rutgers SPH; Barrett in Piscataway)

Due before class: Week 6 quiz (Canvas)

Assigned readings:

- Louis and Platt Chapter 10.
- Honein et al. (2017) Birth defects among fetuses and infants of US women with evidence of possible Zika Virus infection during pregnancy. *JAMA* 317(1): 59-68.
- Rocha et al (2019) Zika virus infection and microcephaly: a case-control study in Brazil. *Annals of Global Health.* 85(1): 1-11.

"Online 30" (complete prior to class): CDC report on opioid use and gastroschisis (Canvas)

3/3/20

Week 7: Environmental exposures during pregnancy (Barrett in Newark)

Due before class: Week 7 quiz (Canvas)

Literature review 1 page proposal

Assigned readings:

- Shin et al (2018) Prenatal exposure to phthalates and autism spectrum disorder in the MARBLES study. *Environmental Health* 17(1): 85.

- Larsson et al (2009) Associations between indoor environmental factors and parental-reported autistic spectrum disorders in children 6-8 years of age. *Neurotoxicology* 30(5): 822-831.

“Online 30” (complete prior to class): What’s in your personal care products? (Canvas)

3/10/20

Week 8: Developmental Origins of Health and Disease (DOHaD) (Guest lecture: Mark McGovern, PhD, Rutgers School of Public Health)

Due before class: Week 8 quiz (Canvas)

Assigned readings:

- Almond et al. (2011) Killing Me Softly: The Fetal Origins Hypothesis. *Journal of Economic Perspectives* 25, 153–172.
- McGovern, et al. (2019) How Much Does Birth Weight Matter for Child Health in Developing Countries? Estimates from Siblings and Twins. *Health Economics* 28, 3–22.
- Roseboom, T., et al. (2006) The Dutch famine and its long-term consequences for adult health. *Early Human Development* 82, 485–491.

“Online 30” (complete prior to class): Destined to be diabetic video (canvas)

3/17/20: Week 9: NO CLASS- SPRING BREAK

3/24/20

Week 10: Social Determinants of Perinatal Health (Guest lecture: Slawa Rowicki, PhD, Rutgers School of Public Health; Barrett in Newark)

Due before class: Week 10 quiz (Canvas)

Assigned readings:

- Burris and Hacker (2017) Birth outcome racial disparities: A result of intersecting social and environmental factors. *Seminars in Perinatology* 41 (6): 360-366.
- Bryant et al (2010) Racial/ethnic disparities in obstetric outcomes and care: prevalence and determinants. *American Journal of Obstetrics and Gynecology*. 202(4):335-43.
- Kozhimannil et al (2016) Disrupting the pathways of social determinants of health: doula support during pregnancy and childbirth. *The Journal of the American Board of Family Medicine* 29(3):308-17.

“Online 30” (complete prior to class): NJ SHAD activity (Canvas)

3/31/20

Week 11: Pregnancy intention (Barrett in Piscataway)

Due before class: Week 11 quiz (Canvas)

Assigned readings:

- Finer and Zolna (2016) Declines in unintended pregnancy in the United States, 2008-2011. *NEJM* 374: 9.
- Widman (2019) Assessment of parent-based interventions for adolescent sexual health: a systematic review and meta-analysis. *JAMA Pediatrics* 173(9): 866-877.

“Online 30” (complete prior to class): A pregnancy prevention intervention (canvas)

4/7/20

Week 12: Pregnancy complications (Guest lecture: Shristi Rawal, PhD, Rutgers School of Health Professions; Barrett in Piscataway)

Due before class: **Literature review paper**

Assigned readings:

- Louis and Platt Chapter 6.
- Sanchalika and Janevic (2015) Risk of gestational diabetes among South Asian immigrants living in New Jersey- a retrospective data review. *J Racial Ethn Health Disparities* 2(4): 510-6.
- Janevic et al (2018) The role of obesity in the risk of GD among immigrant and US-born women in NYC. *Ann Epidemiol* 28(4): 242-248.

“Online 30” (complete prior to class): Causes and consequences of c-sections (canvas)

4/14/20

Week 13: Pregnancy and maternal health in the short and long-term (Barrett in Newark)

Due before class: Week 13 quiz (Canvas)

Assigned readings:

- Louis and Platt Chapter 11.
- Rich-Edwards et al (2010) Breathing life into the lifecourse approach: pregnancy history and cardiovascular disease in women. *Hypertension* 56:331-334.
- Ananth et al (2017) Cardiovascular disease in relation to placental abruption: a population-based cohort study from Denmark. *Paediatric and Perinatal Epidemiology* 31: 209-218.

“Online 30” (complete prior to class): Interpreting graphs

4/21/20

Week 14: Male reproductive health and fertility (Barrett in Piscataway)

Due before class: Week 14 quiz (Canvas)

Assigned readings:

- Gundersen et al (2015) Association between use of marijuana and male reproductive hormones and semen quality: a study among 1215 healthy young men. *AJE* 182(6): 473-81.
- Nassan et al (2019) Marijuana smoking and markers of testicular function among men from a fertility centre. *Human Reproduction*. 1-9.
- Chavarro (2018) Marijuana and reproduction: time to raise the evidence bar to a new high. *Fertility and Sterility*. 109(5): 793-794.

“Online 30” (complete prior to class): Paternal pre-conception health (canvas)

4/28/20

Week 15: TBD (Class or Group Presentations as needed; Barrett in Newark)

TBD

5/5/20

Week 16: Group Presentations (Barrett in Piscataway)

No reading or homework assignment.

5/9/20: FINAL PAPERS DUE at 11:59 PM

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.

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](#).

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