RUTGERS
Edward J. Blostein School of Planning and Public Policy

Semester:	**Spring 2017**
Course Number:	**10:832:335:90/91**
Course Title:	**Epidemiology (Online)**
Course Day and Time:	**Online**
Location:	Our class website is on **eCollege**
Course Instructor:	**Amy Abruzzi, PhD, MPH**
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	Join me on *LinkedIn*

When you email me, please specify "Epi online" in your message to facilitate my reply

Office Hours and Location: Daily by phone, 2-6 PM (215 499 1809) or via email (anytime). I am also happy to talk with you through Facetime, by prior arrangement. Finally, my on campus office hours are usually on Thursdays from 1-3 PM in Bloustein, Room 564, but look for a weekly email should there be any change in this or if you wish to schedule another time by prior arrangement.

Recommended Text:

Dona Schneider and David E. Lilienfeld. *Lilienfeld's Foundations of Epidemiology.* Oxford University Press; 4th edition. ISBN-13: 978-0195377675, ISBN-10: 0195377672

Note: See erratum sheet correcting a formula that appears on page 130. The correct formula should read: *Specificity: d/b+d*

The course website is on **eCollege**. Help with technical problems with eCollege is available 24/7: Email help@ecollege.rutgers.edu or call: 877-778-8437

Course Description:

Study of the principles and methods of epidemiology; the study of the distribution (patterns of occurrence) and determinants (causes) of disease and injury in human populations.

Public Health Learning Goals
Students Will:

1. Think critically in public health
2. Effectively communicate public health information
3. Develop, apply, and analyze concepts from research methods and basic statistics
4. Utilize information literacy skills in public health
5. Understand the role and importance of professional development
6. Understand and apply professional ethics

Core Competencies Addressed[1]

1.a. Public Health History
1.b. Public Health Philosophy
1.c. Core PH Value
1.d. Core PH Concepts
1.e. Global Functions of Public Health
1.f. Societal Functions of Public Health
2. a. Basic Concepts of Data Collection
2. b. Basic Methods of Data Collection
2. c. Basic Tools of Data Collection
2. d. Data Usage
2. e. Data analysis
2. f. Evidence-based Approaches
3. a. Population Health Concepts
3. b. Introduction to Processes and Approaches to Identify Needs and Concerns of Populations
3. c. Introduction to Approaches and Interventions to Address Needs and Concerns of Populations
4.a   Science of human health and disease
5. a. Socio-economic Impacts on Human Health and Health Disparities
5. b. Behavioral Factors Impacts on Human Health and Health Disparities
5. c. Biological Factors Impacts on Human Health and Health Disparities
5. d. Environmental Factors Impacts on Human Health and Health Disparities

Course Overview:

This course covers the principles and methods of epidemiology, the study of the distribution and determinants (causes) of disease and injury in human populations. Upon completion of this course, students will have an understanding of common study designs, be able to calculate typical outcome measures, and be able to critically read the public health literature and evaluate the results of epidemiologic studies.

Method of instruction:

This online course is run as a group independent study with common deadlines. What does that mean? It means that within a certain specified time period (usually a week), you work through the material at your own pace, with my support. Other than meeting my deadlines, there are no preset times you need to be online. You also get to select which readings you do in the discussion room, and so in that sense get to customize the course to your interests. You are also expected to lead a discussion, which includes finding a short video or news item on a key topic, when it's your turn. There are no pre-taped lectures; rather, I prefer to provide detailed lecture notes and other support materials, and large blocks of time I am available by phone or Facetime every week to discuss things. I also encourage you to visit me on campus if you prefer to meet in person. Look for a weekly "when I'm available" email or contact me directly for on campus meeting times.

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[1] As required by the Council on Education in Public Health (CEPH) for accreditation of undergraduate programs in public health.

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Class Outline by Week

Unless otherwise indicated weeks start on **Thursdays**	**Lecture, Key Topic & Exam schedule**	**Required** Unless otherwise indicated, all work must be submitted by **11:59 PM on Thursday** on the dates you see below	Suggested Readings in Recommended Text: *Schneider & Lilienfeld (S&L)*
Week 1, 1/19-1/26	• **Part 1 begins:** • **Review syllabus** • **Review Lecture notes 1: Scope and History of Epidemiology** • Key topics: • Overview of epidemiology; Rise of epi in history; Important figures including John Snow	• **Be sure to:** • **Introduce yourself** • **Do the Syllabus Review Quiz (untimed, 12 points)** All work must be completed by 11:59 PM on Thursday 1/26	In S&L: Chapter 1: Laying the foundations; Chapter 2: Threads of epidemiologic history;
Week 2, 1/26-2/2	• **Review Lecture notes 2: Basic Outcome measures** • Key topics: Counts, ratios, proportions and rates; Crude rates, including the mortality Rate; Proportional Mortality Ratio vs. cause specific mortality rate; Incidence vs. Prevalence; Risk vs. rate	• **Be sure to:** • **Do the Lecture questions- includes questions on Lecture notes 1 and 2 (untimed quiz, 10 points)** • **Sign up to lead a discussion** All work must be completed by 11:59 PM on Thursday 2/2	In S&L: Chapter 3: Selected epidemiologic concepts;
Week 3, 2/2-2/9	• **Review Lecture notes 3: Inferring cause and preventing disease** • Key topics: Inductive vs. deductive science; Models of causality including Epi Triad and Causal Pies; Hill's criteria; Risk factor; Primary, Secondary and Tertiary Prevention and the natural history of disease	• **Be sure to:** • **Do the Lecture questions (untimed quiz, 10 points)** • **Participate in student discussion (5 points)** All work must be completed by 11:59 PM on Thursday 2/9	In S&L: Chapter 4: Inferring causal relationships
Week 4, 2/9-2/16	• **Review Lecture notes 4: Working with Rates and Breaking down the all cancer death rate** • Key topics: Calculating and interpreting crude vs. specific (stratified) vs. directly adjusted	• **Be sure to:** • **Do the Lecture questions (untimed quiz, 10 points)** • **Participate in student discussion (5 points)**	In S&L: Chapter 5: Vital statistics;

	(standardized) rates; Age as a confounder	All work must be completed by 11:59 PM on Thursday 2/16	Chapter 6: Using vital statistics;
Week 5, 2/16-2/23	• **Review Lecture notes 5: Screening** • <u>Key topics:</u> Characteristics and requirements for screening tests; Basic measures (i.e., sensitivity, specificity); Efficiency vs. efficacy; Prevalence and positive and negative predictive values	• **<u>Be sure to:</u>** • **Do the Lecture questions (untimed quiz, 10 points)** • **Participate in student discussion (5 points)** All work must be completed by 11:59 PM on Thursday 2/23	In S&L: Chapter 13: Clinical applications
Week 6, 2/23-3/2	• **Review Lecture notes 6: Data Sources** • <u>Key topics:</u> Criteria used to consider the quality and value of epidemiologic data; Types of data sources; Data limitations; PHI and HIPPA; Key reports such as *Health US* and *Healthy People*	• **<u>Be sure to:</u>** • **Do the Lecture questions (untimed quiz, 10 points)** • **Participate in student discussion (5 points)** All work must be completed by 11:59 PM on Thursday 3/2 NOTE: due to the upcoming exam, there is no penalty period on this quiz.	In S&L: Chapter 7: Morbidity statistics;
Week 7 **3/2-3/9**	• **Timed Exam on Part 1, including Lectures 1-6 (140 points)** • **Short reply questions, untimed (25 points)**	• **You must take the timed timed Exam and submit your answers to the short reply questions by 11:59 PM on Thursday 3/9**	
	• **Spring Break: March, 11-18th**	• **Nothing due- rest and relax!**	
Week 8 Begins Sunday 3/19*-3/23	• <u>**Part 2 begins:**</u> • **Review Lecture notes 7: Intro to Study Designs (Part I) & Descriptive epi (Part II)** • <u>Key topics:</u> Study design overview and basic characteristics; Scientific hypotheses; Two by two tables; Descriptive designs (case reports, ecologic, cross sectional studies); Descriptive epidemiology	• **<u>Be sure to:</u>** • **Participate in Student Discussion (5 points)** • **Start Study Design Comparison Sheet (not for credit, but strongly recommended)** • ***Note:** This is a short week, so there is no untimed quiz. Questions on Lecture 7 are included in next week's untimed quiz, which will	In S&L: Chapter 8: Using morbidity statistics;

	(characteristics of person, place and time)	open early. A few questions on Lecture 7 also appear in weeks 10-13) All work must be completed by 11:59 PM on Thursday 3/23	
Week 9, begins 3/23-3/30	• **Review Lecture notes 8: Case control studies** • <u>Key topics:</u> overview of design including selection of controls, recall bias, advantages and disadvantages, calculation and interpretation of Odds Ratio; Applications and examples of case control studies; P values and Confidence intervals; Clinical vs. statistical significance	• **<u>Be sure to:</u>** • **Do the Lecture questions (untimed quiz, 10 points)** • **Participate in student discussion (5 points)** All work must be completed by 11:59 PM on Thursday 3/30	In S&L: Chapter 10: Observational studies: case-control studies;
Week 10, 3/30-4/6	• **Review Lecture notes 9: Cohort Studies** • <u>Key topics:</u> Overview of design including subtypes, common biases, advantages and disadvantages, calculation and interpretation of Risk Ratio; Applications and examples of cohort studies; Risk Difference, Etiologic Fraction and estimating the benefits of prevention	• **<u>Be sure to:</u>** • **Do the Lecture questions (untimed quiz, 10 points)** • **Participate in student discussion (5 points)** All work must be completed by 11:59 PM on Thursday 4/6	In S&L: Chapter 9: Observational studies: cohort studies;
Week 11, 4/6-4/13	• **Review** L**ecture notes 10: Experimental designs & data control issues** • <u>Key topics:</u> Overview of design, especially RCT and variants (cross over and factorial); Control of bias; Ethical and practical limitations; Internal vs. external validity; Systemic vs. random error	• **<u>Be sure to:</u>** • **Do the Lecture questions (untimed quiz 10 points)** • **Participate in student discussion (5 points)** All work must be completed by 11:59 PM on Thursday 4/13	In S&L: Chapter 11: Experimental studies: randomized controlled trials; Chapter 12: Experimental studies: community and cluster trials;
Week 12, 4/13-4/20	• **Review Lecture notes 11: Infectious disease Epidemiology, Part I and II** • <u>Key topics:</u> Chain of infection; Infectivity, pathogenicity and virulence; Direct vs. indirect transmission; Outbreak investigation	• **<u>Be sure to:</u>** • **Do the Lecture questions (untimed quiz 10 points)** • **Participate in student discussion (5 points)**	In S&L: Chapter 14: Field epidemiology;

	basics and measures including epicurves and attack rates	All work must be completed by 11:59 PM on Thursday 4/20	Review Chapter 3: Selected epidemiologic concepts
Week 13, 4/20-4/27	• **Review Lecture notes 12: Environmental and Occupational health** • <u>Key topics:</u> Agents and health effects for chemicals, heavy metals, ionizing and non-ionizing radiation; Exposure routes into body and exposure pathway; Occupational study design basics including calculation and interpretation of SMR	• <u>**Be sure to:**</u> • **Do the Lecture questions (untimed quiz, 10 points)** • **Participate in student discussion (5 points)** All work must be completed by 11:59 PM on Thursday 4/27 NOTE: due to the upcoming exam, there is no penalty period on this quiz.	S&L: Chapter 15: Evidence-Based practices
Week 14 4/27-5/4	• **Timed Exam on Part 2, including Lectures 8-12, with select concepts from Lectures 1-7 (140 points)** • **Short response questions, untimed (25 points)**	• **You must take the Timed the exam and submit your answers to the short response questions by 11:59 PM on Thursday 5/4** **Please note that due to end of semester grading pressures, the usual penalty period extensions on the second timed exam or short reply questions may be reduced.**	
	For Add Drop dates, see the Office of Academic Services: http://sasundergrad.rutgers.edu/academics/registration/index.html *The Academic Calendar is available from the Registrar at:* http://scheduling.rutgers.edu/calendar.shtml		

Course Assessment

The following assignments will assess learning goals. Additional information on specific assignments is described below and/or is available on our eCollege website.

Think critically in public health

Example: Weekly discussions focus on synthesizing main themes and arguments based on a choice of readings. Students provide their own substantive thoughts and opinions.

Effectively communicate public health information

Example: Student participate in a discussion forum on various current topics in epidemiology. In addition, each student takes a turn leading the discussion and raising questions about their news item.

Develop, apply, and analyze concepts from research methods and basic statistics

Example: Students undertake weekly online exercises requiring and developing these skills. In addition, select questions on the timed exams and short response questions assess them on this.

Utilize information literacy skills in public health

Example: Students must locate new and other professional materials as part of the student lead discussion, and they must also locate additional professional sources as part of their short response questions (essays) as part of the Unit exams.

Understand the role and importance of professional development

Example: Professional writing and communication is assessed by leading discussion and through short response questions (essays).

Understand and apply professional ethics

Example: Many of the weekly topics include controversial subjects which we will discuss in class and students will include in their weekly writing assignments. In addition, the ethics of using human subjects for medical research is explicitly discussed.

Course Grading:

The course is based on a total of 500 points as follows:

- ♦ Two timed online exams, each worth 140 points = 280 points total
- ♦ Two sets of short response questions, each worth 25 points = 50 points total
- ♦ One syllabus review quiz, worth 12 points
- ♦ Ten online untimed quizzes on lecture notes, each worth 10 points = 100 points total
- ♦ Participation in the student discussion forum = 58 points total, including:
  - Weekly response to a posting, 10 @ 5 points per week (50 points)

- Leading one discussion, which includes posting a news item with questions (8 points)

Grading is based on the timely and correct submission of all assignments, and both in class and online participation.

Final Grade cut-points:

Use caution when viewing your rolling average in eCollege. Remember, how you do on an untimed quiz is may not be a good indicator of how you will do on a timed, comprehensive exam.

Your final grade for this class will be assigned using this system:
A:	455 to 500 points	(91– 100 %)
B+:	430 to 454.9 points	(86 – 90.9 %)
B:	400 to 429.9 points	(80 – 85.9 %)
C+:	380 to 399.9 points	(76 – 79.9 %)
C:	350 to 379.9 points	(70 – 75.9 %)
D:	300 to 349.9 points	(60 – 69.9 %)
F:	299.9 or less points	(59.9 % or lower)

I automatically round up to the next grade when you are within 0.5 points of the next cut-point. So, an average of 429.5 = 430 points = B+. Note: this refers to the point count, not the percent average!

Guidelines for Assignments and Projects

Students are expected to work independently on all timed exams and short reply questions, discussion room postings and syllabus review quiz. Failure to do so will be considered a violation of Rutgers' Academic Integrity Policy. (See below for details).

The online class is divided into two parts, each covering six lectures with accompanying homeworks (untimed quizzes and suggested readings). You are also expected to participate in the student discussions and complete the short syllabus review quiz. In addition, there is a timed exam along with short reply questions (untimed) on each half of the course. **The deadlines for most assignments are followed by a 48 hour penalty period during which time you can still submit work for a 10% deduction.**

Syllabus Review quiz (12 points)

A short, untimed quiz on the syllabus will be administered during the first week of class. This is to ensure that students understand the most important deadlines and other requirements for the course.

Timed Exams (2 @ 140 points, 280 points total)

Two **timed** exams will be given online and need to be completed within the time window assigned (typically, 1 hour, 45 minutes). These tests are largely a combination of true and false, multiple choice, matching and include calculations similar to the online quizzes. **Like the quizzes, each student's exam is a random mix of questions that are presented to you one at a time.** While you are able to page back through and answer unfinished questions, there is not adequate time for you to look up answers while the exam is in progress. *Prepare for it as you would any in-class exam and use your time wisely.* As you will see on the schedule, you

can determine when you take the exams within a multi-day period. **Pausing a timed exam once in progress is <u>not</u> possible.** Make sure you have a stable internet connection and your browser is compatible. If you have any doubts about your browser, please contact the eCollege help desk PRIOR to starting the exam. Questions on the exams that are skipped or left blank will register as a zero towards the score you receive. In order to give you greater support during exam, **I will be "on call" for large blocks of time during exam days, and I strongly encourage you to take the exam during one of these blocks.** That way, if you need clarification on a question or experience a problem with the internet, you can call me immediately BEFORE exiting the exam!! **Taking the exam after the scheduled deadline during the 48 hour penalty period carries up to a 10% penalty. In addition, m**ake**-up exams (retakes) are only given under extreme situations <u>including technical failure</u> and also carry a 10% penalty**. Please note: technical failure due to documented eCollege/Rutgers CAS issues are exempt from penalty. Also, please note that due to end of semester grading pressures, the usual 48 hour penalty period extension on the second timed exam may not be possible.

Short Response Questions (2 @25 points, 50 points total)

Each timed unit exam will be accompanied by several untimed short response questions. The questions will be released when the exam opens and are due the drop box by the date the exam closes. See the calendar for details. Unlike the exam, they are not timed so you should be able to carefully research and compose your answers. **Late work carries a penalty (up to 10%) and will not be accepted after the 48 hour penalty period.** Also, please note that due to end of semester grading pressures, the usual 48 hour penalty period extension on short response questions accompanying the second timed exam may not be possible.

Lecture Questions (untimed quizzes) (10@10 points each, worth 100 points total)

Ten untimed, online quizzes will become available to you on our eCollege course site on the day it is assigned. Typically, each quiz contains 10 questions worth a point each. Quizzes may be worked on for an unlimited amount of time before the due date and of course you are expected to use your notes. Questions tend to emphasize calculations and the interpretation of data, and may be reasonably thought of as "problem sets". Do not skip questions as they will register as a zero towards your score. Your score and the correct answers to the quiz will be available in the gradebook two days after the quiz closes. **There is a penalty (up to 10%) for taking a Quiz during the 48 hour penalty period following the scheduled closed date, which is available for all quizzes except those immediately preceding a timed exam. It is <u>not</u> possible to take a quiz after the penalty period ends and no make-ups for missed quizzes. I will, however, drop your lowest (including a missed) untimed quiz (worth 10 points). This is done by adding a perfect score in its place, which is mathematically more favorable to you then simply omitting the points from your average.**

Participating in 10 student discussions (up to 5 points each, worth 50 points total)

<u>Guidelines for Participating in Student Discussions:</u>

You are expected to participate in discussion. To do this, Two things are required. First, pick the reading and question that interests you most and follow the rules below for your reply. Second, post a brief but thoughtful response to another student's reply. It need not be in the same thread. Note: this needs to be two postings - don't combine it into one.

Remember, YOUR POSTING MUST BE IN YOUR OWN WORDS. BE SURE TO ENCLOSE ALL QUOTES IN PARENTHESES (" ") AND GIVE SOURCES YOU CONSULT PROPER CREDIT! You don't need to cite class notes, but referring to them is helpful. **Late work carries a penalty (up to 10%) and will not be accepted after the 48 hour penalty period following the scheduled due date.**

Grading policy for online discussion responses:

♦ 5 points (full credit): participates fully in the discussion during that week, e.g., responds thoughtfully and thoroughly each week to at least one news item (**main posting**); uses data to support opinions; raises new questions and relates the material to the lectures. Typically, two good paragraphs. Also, provides a thoughtful, separate reply (**second posting)** to another student's comments (typically, 3 or 4 sentences).
♦ 1-4.9 points (partial credit): participates a little, e.g., makes a few general comments or simply states opinion without reference to specific readings or lecture notes; Fails to respond to another student's posting.
♦ 0 points (no credit): doesn't participate at all; participates but plagiarizes from sources, such as cutting and pasting from web sites, journal articles, other student work, etc.

*Leading a student discussion (*up to 8 points total)

Students are asked to sign up for a week to lead the discussion. In order to do this, you first need to **locate an interesting article** or video that relates to the key topic and **questions for discussion**. You may find it helpful to select something from the reading room, if you like. **You are also expected to reply to your discussion thread at the end of the week. Your postings are** graded separately for **content** as well as **timeliness**. In order to be considered for full credit, you must have your article and questions posted anytime on the first day of the discussion week (i.e.**Thursday)** you signed up for. In the rare event that two students select the exact same news article, I will ask the second person to post an alternative. I encourage you to check with each other so as to avoid duplication! *In addition, you automatically get credit for participating the week you lead, so in effect this activity is worth 13 points.*

Grading policy when leading a discussion:

Timeliness (4 points)
♦ 4 points (full credit): posts link to short article or video with your discussion questions to the website on or by beginning the discussion week.
♦ 1-3.9 points (partial credit): deduct a point for posting link and questions after the start of the discussion week.
♦ 0 points (no credit): fails to post any link or questions within 4 days of the start of the discussion week, or plagiarizes from other work.

Content (up to 4 points)
♦ 4 points (full credit): posts an interesting news item along with questions that encourages a response based on the item; content and questions is related to key topics and attempt to bridge the reading with the course material; responds to student comments at end of discussion week.
♦1-3.9 points (partial credit): posts questions that ramble or are generally unclear and/or seeks student opinion without reference to the news item.

♦ 0 points (no credit): fails to post any link or questions; plagiarizes from other sources or other student work.

Academic Integrity

Academic Integrity is vital to the mission of Rutgers, to education at Rutgers and membership in the Rutgers community. It is a core value that supports trust among students, and between students and teachers. It is also a shared value; administration, faculty and students each play a vital part in promoting, securing and nurturing it.

Academic dishonesty is not an individual act that affects only the students involved. It violates communal trust, impacts other members of the community, and is an offense against scholarship. For this reason, any instance of cheating or plagiarism will be dealt with harshly.

Honesty matters. As a shared value, administration, faculty and students each play a vital part in promoting, securing and nurturing it. See the Rutgers Academic Code and Academic Oath at:

http://academicintegrity.rutgers.edu/

Disaster Plan

During cyberattacks and other disasters affecting the campus network, eCollege sets up an alternative access for students so that we may complete the semester as planned.   In the event that Rutgers CAS experiences an interruption of service this semester, please make sure you have:

- Access to the internet outside of Rutgers University (such as through an off campus friend or family member. It is also freely available at Panera, Starbucks, and the public library)
- You may also need access to a laptop or other fully functional computer devise that allows you to get online outside of Rutgers CAS.   Mobile devices such as iPhones or tablets may not be enough to complete all assignments, including exams.

In addition, please look for an email from me during the first week of class, instructing you how to best provide me with your cell phone or a non-Rutgers email in case of emergency.

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 with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: https://ods.rutgers.edu/students/documentation-guidelines. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. To begin this process, please complete the Registration form on the ODS web site at: https://ods.rutgers.edu/students/registration-form. **Please**

notify me as soon as possible if you are in the process of obtaining documentation and turn your paperwork in to me at least two weeks prior to the first exam.

Privacy statement:

The course web site may contain student information that is protected by the Family Educational Rights to Privacy Act (FERPA). Disclosure to unauthorized parties violates the federal privacy laws. Email sent via our course website may make student names and email addresses visible to other students in class. Please remember that this information is protected by these federal privacy laws and must not be shared with anyone outside of class.