Course Title: Design of Epidemiologic Studies
Course Number: QNME 0611
Course Location: Newark Campus SSB 741
Course Date & Time: Tuesday 5:30-8:30
Course Instructor: Andrea Fleisch Marcus PhD, MPH
Stanley S. Bergen, Jr. Building, Room 157 (973)972-6245 marcusab@shrp.rutgers.edu
Office Hours: By appointment only
Required Course Text: Moyses Szklo and F Javier Nieto, Epidemiology: Beyond the Basics 3rd edition.

Additional/Supplemental Readings/Resources:

Greenhalgh, T. How to Read a Paper. BMJ Publishing Group
http://www.bmj.com/about-bmj/resources-readers/publications/how-read-paper

http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.0040297

http://pmj.bmjournals.com/cgi/reprint/80/941/140

Additional Readings may be assigned throughout the semester and will be provided on the course Moodle website

Course Description: This is an intermediate level epidemiologic methods course that intends to build on information and skills learned in the introductory-level course. The course will focus on study design and possible threats to validity and how they can be addressed.

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

- Use of epidemiological concepts to identify and evaluate public health and clinical problems
Develop research protocols to assess public health problems, clinical questions and evaluate public health programs
• Critically evaluate epidemiological data and findings
• Communicate results from epidemiologic studies
• Conceptualize public health or clinical research questions using quantitative methods
• Identify the principles and limitations of public health screening programs
• Conceptualize public health or clinical research questions using advanced quantitative methods techniques

Please visit the Department webpages on the School of Public Health’s website at http://sph.rutgers.edu/ for additional competencies addressed by this course for other degrees and departments.

Course Objectives: By the completion of this course, students will be able to:
• Critically review a published epidemiological study,
• Identify epidemiologic study designs and possible threats to validity,
• Identify strategies to address threats to validity, and
• Develop a realistic research proposal.

Course Requirements and Grading:
• Weekly assignments:
  1. Most of the weekly sessions will begin with the critique of a journal article. (depending on number of students in the class, the 1-2 students will be assigned to present the article). Student(s) assigned to present will prepare a short (20-30 minute) presentation according to the rubric distributed during the first week of class. All of the students in the class are expected to read the assigned article and participate in the discussion. Weekly articles will be posted in Moodle at least one week before they are due.
  2. Readings from the text (and supplements when appropriate) will be assigned each week. Students are expected to do the reading prior to that week’s class. Exercises from the text book will also be assigned. The answers to the exercises are found in the end of the text and therefore they are not expected to be handed in. However, select exercises will be discussed in class and may appear on the final exam so completion of the exercises is highly encouraged.
  3. Class participation will be graded. Students will be expected to be prepared for the class session via the readings and exercises. In addition, students are encouraged to engage in the journal critique by asking questions and bringing up discussion points that the presenting students did not address.
  4. Students are welcome to ask questions about the course material as they are preparing each week via the Moodle discussion board.
• Research development project: Students will work in groups for this project (size TBA based on enrollment). Each group will be responsible for developing a research
question and reasonable research plan. The research will not be carried out, however, it should be something that would be achievable in real-life. Research projects should follow the rubric that will be distributed in class. This assignment will be due in parts-

1. The research questions, specific aims, rationale and a draft protocol will be completed and handed-in for review by the instructor. Each group will present this information to the class and will receive feedback from their classmates as well as from the instructor.

2. On due date 2, completed assignments which incorporate the class’s critique and instructors comments will be submitted along with an additional section – strengths and limitations (which will be required to include a discussion of potential study biases, confounders, etc and how they may be addressed).

- All assignments are due by 5:15 on the due date (unless otherwise noted). Assignments may be submitted electronically to the instructor’s email: marcusab@shrp.rutgers.edu. Late assignments will be graded at the instructor’s discretion but given a markdown of 10 points for lateness. Please look out for an email from the instructor that confirms receipt of your assignment.
- Exams: There will be a final exam

- Grading:
  1. Journal article critique 10%.
  2. Weekly participation 10%
  3. Research development project 50%
  4. Final exam 30%

  Total: 100%

Course Schedule:

- January 21, 2014
  o Topics: Introductions and course requirements;
    Critical and innovative thinking in epidemiology
  o Readings: STROBE; Ness R. “Tools for innovative thinking in epidemiology”

- January 28, 2014
  o Topics: Analytical and descriptive research
    Overview of major epidemiologic study designs
  o Readings: Chapter 1 of Szklo & Nieto
  o Assignments due:
    o Chapter 1 (Nieto & Szklo) exercises (not handed in)

- February 4, 2013
  o Topics: Measures of disease occurrence
    (Incidence, prevalence and odds)
    Discussion of research project
Readings: Chapter 2 of Szklo & Nieto

Assignments due:
  - Chapter 2 (Nieto & Szklo) exercises (not handed in)

February 11, 2014
- Topics: Measuring associations between exposures and outcomes
- Reading: Chapter 3 of Szklo and Nieto
- Discussion of research project ideas
- Assignments due:
  - Submit research questions for final approval
  - Chapter 3 exercises

February 18, 2014
- Topics: Understanding lack of validity: bias
- Reading Chapter 4 of Szklo and Nieto
- Assignments due:
  - Chapter 4 exercises

February 25, 2014
- Topics: Identifying non-causal associations: confounding Use of Directed Acyclic Graphs
- Assignments due:
  - Chapter 5 exercises

March 4, 2014
- DUE TODAY AT 5:15- Research project part 1.
  - Groups will present their research projects which will be actively discussed by the class
March 11, 2014
- Topics: Assigning and Assessing Heterogeneity of Effects: Interaction
  Multiplicative vs Additive interaction
- Readings: Chapter 6 of Szklo and Nieto
- Assignments due:
  - Chapter 6 exercises

March 18, 2014: SPRING BREAK

March 25, 2014
- Topics: Stratification and Adjustment: Multivariate Analysis in Epidemiology-Part 1: Rationale for adjustment and techniques for stratification-based adjustment
- Reading: Chapter 7 parts 7.1-7.3
- Assignments due:
  - Chapter 7 exercise 1, 3, 4

April 1, 2014
- Topics: Stratification and adjustment: Multivariate analysis in epidemiology- Part2: Regression, residual confounding and over-adjustment
- Discussion of research projects
- Reading: remainder of Chapter 7
- Assignments due:
  - Exercises Chapter 7 #s 2 & 5

April 8, 2014
- Topics: Quality Assurance and Control
- Reading Chapter 8 of Szklo & Nieto
- Assignments due:
  - Chapter 8 exercises

April 15, 2014: CLASS WILL NOT BE HELD TONIGHT. Instead students are expected to meet with their groups sometime this week to finalize their research projects. Students are welcome to meet via Adobe Connect Classrooms that the instructor will set up in Moodle.
April 22, 2014

- Topics: Communicating Results of Epidemiologic Studies
- Readings: Chapter 9 of Szklo & Nieto
- Assignments due:
  - DUE TODAY AT 5:15- Final Research project
  - Chapter 9 exercises

April 29, 2014

- Topics: Epidemiologic Issues in the Interface with Public Health Policy
  - Causality models
  - Short review of material for the final exam
- Readings: Chapter 10 of Szklo and Nieto
- Assignments due:
  - Chapter 10 exercises

May 13 Final exam

School of Public Health Honor Code: The School of Public Health Honor Code is found in the student bulletin (sph.rutgers.edu/academics/catalog/index.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.

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.