Spring 2018

EPID 7131 - Epidemiology of Chronic Disease

Jian Zhang
Georgia Southern University, Jiann-Ping Hsu College of Public Health, cfung@georgiasouthern.edu

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Georgia Southern University  
Jiann-Ping Hsu College of Public Health

EPID 7131 – Epidemiology of Chronic Disease

<table>
<thead>
<tr>
<th>Instructor:</th>
<th>Jian Zhang, MD, DrPH.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office:</td>
<td>Hendricks Hall, Room 2032</td>
</tr>
<tr>
<td>Phone:</td>
<td>(912)-478-2290 (office), (770)-695-5158 (cell)</td>
</tr>
<tr>
<td>E-Mail Address:</td>
<td><a href="mailto:Jianzhang@georgiasouthern.edu">Jianzhang@georgiasouthern.edu</a> (the best way to reach me)</td>
</tr>
<tr>
<td>Office Hours:</td>
<td>Monday 3:30 PM - 4:30 PM</td>
</tr>
<tr>
<td></td>
<td>Tuesday 1:00 AM - 6:00 PM</td>
</tr>
<tr>
<td></td>
<td>Consultation appointments are available on an as-needed basis.</td>
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<tr>
<td>Web Page:</td>
<td>Google share driver</td>
</tr>
<tr>
<td>Class Meets:</td>
<td>Monday, 6:30 pm – 9:15 pm (Engineering Building 2103)</td>
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</tbody>
</table>

**Prerequisites:**  PUBH 6533 or equivalent or permission of the instructor

**Catalog Description:**

This course is designed to introduce the student to the ever-expanding area of chronic disease epidemiology. Students will be introduced to the current status of chronic disease and control programs, methods used in chronic disease surveillance, intervention methods, and modifiable risk factors. Some of the major chronic diseases such as cancer, cardiovascular disease, chronic lung disease, diabetes and arthritis will be discussed in detail.

**Recommended Textbook:**


Supplemental reading materials, chapters from other books or publications appearing in major journals, will be provided by the instructor and accessible online at the course website or distributed during class.

**Program Goals:**

Upon graduating, a student with an MPH in Epidemiology should be able to:

1. Analyze a public health problem in terms of magnitude, person, and time in rural and urban settings.
2. Describe populations by the following: race, ethnicity, culture, societal/educational/professional backgrounds, age, gender, religion, disability, and sexual orientation.
3. Design surveillance for a public health issue.
4. Identify surveillance data needs.
5. Implement new or revise existing surveillance systems.
6. Explain key findings from a surveillance system.
7. Design surveillance systems to include groups subject to health disparities or other potentially underrepresented groups.
8. Apply current knowledge of disease etiology for use in guiding the practice of epidemiology.
9. Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.
10. Apply principles of good ethical and legal practices as they relate to study design and the collection, maintenance, use and dissemination of epidemiologic data.
11. Demonstrate management of data from surveillance, investigations, or other sources.
12. Analyze data from epidemiologic investigations, studies, and surveillance.
13. Demonstrate use of standard population categories or subcategories when performing data analysis with special emphasis on the identification of health disparities and promotion of health equity.
14. Summarize results of analysis of epidemiologic data.
15. Draw conclusions based on the results of analysis of epidemiologic data, including making causal inference on the basis of the principles of causation.
16. Apply the basic terminology and definitions of epidemiology for the investigation of acute and chronic health conditions or other adverse outcomes in a population.
17. Explain the use of laboratory resources to support epidemiologic activities.
18. Explain how determinants of health affect public health practice.
19. Produce written and oral reports and presentations that communicate necessary information to professional audiences, policy makers and the general public.
20. Evaluate the strengths and limitations of epidemiologic research findings.
21. Explain the different uses of basic study designs and selection of variables used in public health.
22. Apply principles of informatics, including data collection, processing, and analysis, in support of public health practice.
23. Demonstrate use of specific sociocultural factors in a population or community for the interpretation of epidemiologic findings.
24. Design epidemiologic investigations using languages and approaches tailored to the targeted population or community.
25. Demonstrate the basic principles of risk communication.
26. Recommend evidence-based interventions and control measures in response to epidemiologic findings.
27. Evaluate public health programs at the regional, state, local, or tribal level.
28. Prepare proposals, in whole or in part, to obtain funding for epidemiologic activities.

Course Objectives:
Upon completion of this course, the student will be able to:

1. Identify relevant data and information sources on chronic disease outcomes within and outside public health systems. (Competency 1, 21, 27)
2. Quantify population-based chronic disease risk. (Competency 1, 8, 9, 12, 13, 16, 22, 27)
3. Determine threshold values (e.g., baseline disease burden, prevalence of risk behaviors) for public health action. (Competency 1, 8, 9, 12, 13, 16, 22, 27)
4. Conduct thorough search of the scientific literature and public health databases using search engines and methods relevant to chronic diseases. (Competency 1, 8, 16, 19, 20, 28)
5. Explain the need for further investigation or other public health action on the basis of results of literature review and assessment of current data. (Competency 1, 9, 19, 20, 23, 26, 28)
6. Describe trends in the epidemiology of common chronic diseases. (Competency 1, 2, 8, 12-14, 16, 19, 25, 28)
7. Describe the patterns and occurrence of major etiologic factors and their relation to common chronic diseases and conditions. (Competency 1, 2, 8, 12-14, 16, 19, 25, 28)
8. Describe basic pathophysiologic and psychopathologic mechanisms related to risk factors and chronic diseases. (Competency 8, 17, 28)
9. Explain how genetics and genomics affect chronic disease processes and public health policy and practice. (Competency 5, 8, 17-18, 28)
10. Demonstrate use of etiologic principles into the development of chronic disease prevention and control strategies. (Competency 8, 9, 17-18, 28)
11. Explain the role and influence of socio-behavioral factors (including community, political, social, family, and individual behavioral factors) in chronic disease risk. (Competency 8, 9, 18, 23, 28)
12. Access routinely collected data on chronic disease outcomes for analysis. (Competency 1, 8, 9, 10, 12, 16, 22, 27)
13. Create an analysis plan for use of epidemiologic data from investigations, studies, or surveillance. (Competency 2, 8, 12, 16, 21, 27)
14. Calculate necessary standard epidemiologic measures and measures of association (e.g., incidence, prevalence, attributable risk, odds ratio). (Competency 2, 8, 12, 16, 21, 27)
15. Synthesize information from a variety of epidemiologic studies using meta-analysis methodology. (Competency 2, 8, 12, 14-16, 20-21, 23, 27)
16. Evaluate the strengths and limitations of epidemiologic reports and articles within the scope of chronic disease epidemiology.
17. Design methodologically sound epidemiologic studies of chronic disease;
18. Identify the roles and capabilities of public health laboratories and other laboratories and how they are used in epidemiologic investigations. (Competency 8, 17)
19. Interpret laboratory data related to chronic disease, accounting for factors that influence the results of screening and diagnostic tests. (Competency 8, 10, 17)
20. Identify audience, methods, and content for communication of epidemiologic findings. (Competency 19, 25)
21. Develop content for risk communication messages in collaboration with other public health professionals. (Competency 19, 25, 26)
22. Review risk communication messages for scientific accuracy and clarity. (Competency 19, 25)
23. Create standard epidemiology report and necessary components including tables, graphs, and charts. (Competency 2, 8, 12, 14-16, 20-21, 23, 27)
24. Demonstrate use of scientific evidence in preparing recommendations for action or interventions (Competency 8, 20, 26)
25. Identify cultural factors that may influence the outcome of an epidemiologic investigation. (Competency 18-20, 23)
Performance-Based Objectives Linked to Course Activities (Note: Activities Described in Next Section)

1. Students will demonstrate a basic understanding of the principles and terminology of chronic disease epidemiology. (Activity 1)

2. Students will demonstrate an appreciation the sense of urgency and the magnitude of these emerging issues associated with chronic diseases. (Activity 2)

3. Students will demonstrate an appreciation of the multi-factorial nature of chronic diseases, as well as social and culture determinants of chronic diseases (Activity 3)

4. Students will demonstrate an awareness of the evidence-approved effective strategies available to control and prevent chronic disease locally, national, and globally (Activity 4)

5. Students will demonstrate the ability to communicate chronic disease related research through writing or presentation to lay and professional audiences (Activity 5).

Assessment of Student Learning

1. Activity 1: Use course lectures and class discussions demonstrate a basic understanding of the principles and terminology of chronic disease epidemiology, including, but not limited to, chronic disease surveillance, big 4 killers, big 4 risk factors, racial/ethnical disparity of chronic disease. Competence in basic terminology will be evaluated using final examine and pop quizzes.

2. Activity 2: an appreciation the sense of urgency and the magnitude of these emerging issues associated with chronic diseases will be evaluated using the written submission of the mini-review (assignment 1), which requires students to summarize the epidemiology of selected risk factor/disease from the biggest developing country - China.

3. Activity 3: The course has been designed to be driven by floor, the class discussion will offer a plenty of opportunities to assess students’ an appreciation of the multi-factorial nature of chronic diseases, as well as social and culture determinants of chronic diseases.

4. Activity 4: an awareness of the evidence-approved effective strategies available to control and prevent chronic disease locally, national, and globally will be evaluated using the final submission of an extensive review of a control and prevention measurement of selected chronic disease (assignment 2 and 3).

5. Activity 5: Competence in written communication or oral presentation to the professional audience or lay will be evaluated using the Preparation and delivery of a PowerPoint presentation of a comprehensive review of extensive review of a control and prevention measurement of selected chronic disease.
# Overview of the content to be covered

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Readings (recommended textbook)</th>
<th>Assignment</th>
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<tbody>
<tr>
<td><strong>PART I: Overview of chronic disease, concepts pertain to chronic disease epidemiology</strong></td>
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<tr>
<td>1</td>
<td>01/08</td>
<td>Special topic: China trip</td>
<td>Assignment 1: Proofreading and comments on student’s research projects from previous cohorts.</td>
</tr>
<tr>
<td></td>
<td>01/08</td>
<td>What is chronic disease?</td>
<td></td>
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<tr>
<td>3</td>
<td>01/29</td>
<td>Are we alone?</td>
<td>Understanding US Health Care Spending, NIHCN Foundation Data Brief</td>
</tr>
<tr>
<td></td>
<td>01/29</td>
<td>The goal of chronic disease control and prevention</td>
<td>Zhang et al Am J Public Health. 2012 Dec;102(12):e14-6</td>
</tr>
<tr>
<td>5</td>
<td>02/12</td>
<td>Risk Factors: Part I Physiological risk factors</td>
<td>Chapter 11-12, High blood pressure and cholesterol Zhang J. AJCN 80: 291-298</td>
</tr>
<tr>
<td></td>
<td>03/05</td>
<td>Risk Factors: Part II Overweight/obesity</td>
<td>Chapter 9: Obesity and Overweight Zhang J, Obesity 16 (8), 1809-1815</td>
</tr>
<tr>
<td><strong>PART II: Risk factors and major chronic conditions</strong></td>
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<tr>
<td>7</td>
<td>02/26</td>
<td>Risk Factors: Part I Physiological risk factors</td>
<td>Assignment 3: Extensive literature review on the relationship between X syndrome &amp; cataract/glaucoma [Due of assignment 2]</td>
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<tr>
<td></td>
<td>02/26</td>
<td>Overweight/obesity</td>
<td>Chapter 9: Obesity and Overweight Zhang J, Obesity 16 (8), 1809-1815</td>
</tr>
<tr>
<td>8</td>
<td>03/19</td>
<td>Tobacco and Alcohol Physical inactivity</td>
<td>Chapters 5,7 and 8: Tobacco Use, Alcohol Use, Physical Inactivity</td>
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<tr>
<td><strong>PART III: Selected major chronic diseases</strong></td>
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<td></td>
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<tr>
<td>11</td>
<td>04/02</td>
<td>Pediatric obesity: Challenges of chronic disease control</td>
<td>Chapter 3: Intervention methods for chronic disease control</td>
</tr>
<tr>
<td>12</td>
<td>04/09</td>
<td>Cardiovascular and cerebrovascular Diseases</td>
<td>Chapter 13: Cardiovascular Disease</td>
</tr>
<tr>
<td>13</td>
<td>04/16</td>
<td>Diabetes</td>
<td>Chapter 10: Diabetes</td>
</tr>
<tr>
<td>14</td>
<td>04/23</td>
<td>Cancer</td>
<td>Chapter 14: Cancer [Due of assignment 3 (8 - 10 double-spaced pages excluding the tables)]</td>
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<tr>
<td>15</td>
<td>05/01</td>
<td>Final exam</td>
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Samples of your work may be reproduced for search purposes and/or inclusion in the professor’s teaching portfolio. You have the right to review anything selected for use, and subsequently ask for its removal.

**Instructional Methods:** Class meetings will be a combination of lecture and class discussion. Written homework assignments and examinations constitute the basis of student evaluation.

**Assignments:**

**Written Exams:** Students will have ONE written exam, the final exam. Basic understanding of the concepts of preventive health, epidemiology, surveillance systems, diagnostics, interventions, and specific diseases and risk factors of populations will be assessed.

**Homework:** There are 3 homework assignments. Please be advised that the assignment 3 is worthy 40 points of the course grade, more than the contribution from final exam. It is also worth noting that assessing the quality of epidemiology studies from methodological perspective remains the talking points of all homework assignments, however, you are required to examine these issues in the context of chronic diseases, in the current case, pedantic obesity, your professor’s main research area.

**Exam Schedule and Final Examination:**

Final Examination: April 30, 2018

**Grading:**

Weighting of assignments for purposes of grading will be as follows:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1</td>
<td>10 points</td>
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<tr>
<td>Assignment 2</td>
<td>20 points</td>
</tr>
<tr>
<td>Assignment 3</td>
<td>40 points</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20 points</td>
</tr>
</tbody>
</table>

Class attendance, pop quizzes and discussion participation 10 points

**Total Possible Points** 100 points

Your grade will be reflected by the following scale:

- 90 – 100     A
- 80 – 89      B
- 70 – 79      C
- 60 – 69      D
- Below 60     F
Your grades will not be posted. All exams and assignments will be graded and returned promptly so that students may accurately calculate their grades at any point in time during the semester.

All your work needs to be produced in a professional manner. The typos, grammar errors should be kept at minimum if any. The format and readability of your submissions will be taken into consideration when the instructor grades. At the present time, only MS word files are acceptable.

All assignments should be received by 6:00PM of the due day by electronic submission to jianzhang@georgiasouthern.edu. You must receive a confirmation of receipt to assume these have been well received by instructor for the final grade. You are responsible for these submissions and if the files are not received in a readable format, hard-copies are due at the same time in my mailbox located in the 2nd floor of Western wing, Hendricks Hall. So attempt early submission.

There are times when extraordinary circumstances occur (e.g., serious illness, death in the family, etc.). In such circumstances, and/or if you need additional time to satisfactorily complete any course requirement, please consult with the instructor within a reasonable amount of time. *** Technological difficulties do NOT constitute legitimate excuses or emergencies ***

Nota Bene: Extensions are not guaranteed and will be granted solely at the discretion of the instructor.

NO EXTRA CREDIT PROJECTS WILL BE Assigned!

**Academic Misconduct:** As a student registered at this University, it is expected that you will adhere to only the strictest standards of conduct. It is recommended that you review the latest edition of the Student Conduct Code book, as well as the latest Undergraduate & Graduate Catalog to familiarize yourself with the University’s policies in this regard. Your continued enrollment in this course is an implied contract between you and the instructor on this issue. From this point forward, it is assumed that you will conduct yourself appropriately.

Academic integrity relates to the appropriate use of intellectual property. The syllabus, lecture notes, and all materials presented and/or distributed during this course are protected by copyright law. Students are authorized to take notes in class, but that authorization extends only to making one set of notes for personal (and no other) use. As such, students are not authorized to sell, license, commercially publish, distribute, transmit, display, or record notes in or from class without the express written permission of the instructor.
**University’s policy against Plagiarism**

"According to the Academic Dishonesty Policy of GSU, Plagiarism includes (but is not limited to):

A. Directly quoting the words of others without using quotation marks or indented format to identify them.
B. Using published or unpublished sources of information without identifying them.
C. Paraphrasing material or ideas without identifying the source.
D. Unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic material.

If you are accused of plagiarism by a JPHCOPH, the following policy, as per the Judicial Affairs website ([http://students.georgiasouthern.edu/judicial/faculty.htm](http://students.georgiasouthern.edu/judicial/faculty.htm)) will be enforced:

**PROCEDURES FOR ADJUDICATING ACADEMIC DISHONESTY CASES**

First Offense - In Violation Plea

1. If the professor and the Dean of Students agree that the evidence is sufficient to warrant a charge of academic dishonesty, the professor should contact the Office of Judicial Affairs to determine if this is a first violation of academic dishonesty. The incident will be reported via the following website: [http://students.georgiasouthern.edu/judicial/faculty.htm](http://students.georgiasouthern.edu/judicial/faculty.htm)

2. If it is a first violation, the professor should talk with the student about the violation. If the student accepts responsibility in writing and the professor decides to adjudicate the case, the following procedures will be followed:
   a. The student will be placed on disciplinary probation for a minimum of one semester by the Office of Judicial Affairs.
   b. The student will be subject to any academic sanctions imposed by the professor (from receiving a 0 on the assignment to receiving a failing grade in the class).
   c. A copy of all the material involved in the case (Academic Dishonesty Report Form and the Request For Instructor to Adjudicate Form) and a brief statement from the professor concerning the facts of the case and the course syllabus should be mailed to the Office of Judicial Affairs for inclusion in the student’s discipline record.
First Offense - Not In Violation Plea (student does not admit the violation)
If the professor and the Dean of Students agree that the evidence is sufficient to warrant a charge of academic dishonesty, the professor should contact the Office of Judicial Affairs to determine if this is the first or second violation of academic dishonesty. The student will be charged with academic dishonesty and the University Judicial Board or a University Hearing Officer would hear the case. If the student is found responsible, the following penalty will normally be imposed:
   a. The student will be placed on Disciplinary Probation for a minimum of one semester by the Office of Judicial Affairs.
   b. The student will be subject to any academic sanctions imposed by the professor.

Second Violation of Academic Dishonesty
If the professor and the Dean of Students agree that the evidence is sufficient to warrant a charge of academic dishonesty, and if it is determined this is the second violation, the student will be charged with academic dishonesty and the University Judicial Board or a University Hearing Officer would hear the case. If the student is found responsible, the following penalty will normally be imposed:
   a. Suspension for a minimum of one semester or expulsion.
   b. The student will be subject to any academic sanctions imposed by the professor.

NOT RESPONSIBLE FINDING
When a student is found not responsible of academic dishonesty, the work in question (assignment, paper, test, etc.) would be forwarded to the Department Chair. It is the responsibility of the Department Chair to ensure that the work is evaluated by a faculty member other than the individual who brought the charge and, if necessary, submit a final grade to the Registrar. For the protection of the faculty member and the student, the work in question should not be referred back to the faculty member who charged the student with academic dishonesty. In the case of a Department Chair bringing charges against a student, an administrator at the Dean’s level will ensure that the student’s work is evaluated in an appropriate manner.

**Academic Handbook:** Students are expected to abide by the Academic Handbook, located at [http://students.georgiasouthern.edu/sta/guide/](http://students.georgiasouthern.edu/sta/guide/). Your failure to comply with any part of this Handbook may be a violation and thus, you may receive an F in the course and/or be referred for disciplinary action.

**University Calendar**
for the Semester: The University Calendar is located with the semester schedule, and can be found at: http://www.collegesource.org/displayinfo/catalink.asp.

Class Attendance and Participation Policy:

Federal regulations require attendance be verified prior to distribution of financial aid allotments. Attendance will not be recorded after this initial period. The level and quality of participation by each student during lectures, group activities and discussions will be taken into consideration when calculating final grades. This means points may be awarded or deducted depending on the quality of your participation throughout the term.

Please come to class on time and be prepared to stay until the end of class. Cell phones should not be used in class. Please set them to “vibrate” in case of emergency or if you have an urgent personal or professional reason for expecting a call. IF YOU HAVE TO CHECK YOUR CELL PHONE, PLEASE DO SO IN THE HALLWAY OUTSIDE OF THE CLASS ROOM. “Side” conversations among students are not acceptable unless your conversation is a course-related one.

One Final Note:
The contents of this syllabus are as complete and accurate as possible. The instructor reserves the right to make any changes necessary to the syllabus and course material. The instructor will make every effort to inform students of changes as they occur. It is the responsibility of the student to know what changes have been made in order to successfully complete the requirements of the course.