Fall 2021

PUBH 8133 – Advanced Epidemiology

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Course Prerequisite:
Enrollment into the DrPH Program, Introduction to Epidemiology, basic experience in the use of the personal computer and statistical software, or permission of the instructor.

Catalog Description:
An in-depth integration of advanced epidemiology concepts designed to reinforce epidemiological principles, as well as build a foundation for epidemiologic research in public health practice. Specific course content includes theory, methods, and applications for epidemiologic studies including random and systematic error, confounding, counterfactuals, causal inference, effect modification, internal and external validity and advanced study design. Emphasis will also be placed on choosing and performing appropriate analytic techniques necessary for biostatistical inference, including estimation and interpretation of effect measures. (GSU Graduate Catalog)

Required Texts:
*Epidemiology: Beyond the Basics (4th edition)* Moyses Szklo & Javier Nieto

Readings from journal articles, manuscripts, and other materials, listed in the daily assignments posted online or distributed in class.
Optional Textbooks:


Epidemiology Core Competencies:
1. Evaluate the existence of public health problems in rural and urban settings, both locally and internationally.
2. Analyze data from epidemiologic investigations, studies, and surveillance, with special emphasis on the identification of health disparities and promotion of health equity.
3. Evaluate causal inferences from epidemiologic data.
4. Evaluate the validity and reliability of public health screening programs.
5. Evaluate the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.
6. Synthesize principles of good ethical and legal practice pertaining to the collection, maintenance, use and dissemination of data.
7. Apply current knowledge of disease etiology for use in guiding public health practice.
8. Evaluate the effects of determinants of health on public health practice.
9. Design investigations of acute and chronic health conditions or other adverse outcomes using languages and approaches tailored to the targeted population or community.
10. Evaluate public health programs at the global, national, regional, state, local, or tribal level.
11. Recommend use of laboratory resources to support epidemiologic activities.
12. Apply principles of informatics, including data collection, processing, and analysis, in support of public health practice.
13. Communicate epidemiologic information to lay and professional audiences.
14. Evaluate the strengths and limitations of epidemiologic research findings.
15. Recommend evidence-based interventions and control measures in response to epidemiologic findings.

Course Objectives (Linked to the Concentration Competencies):
1. Differentiate between epidemiologic study designs and assess their relative strengths. (Competencies 3, 1)
2. Understand the multiple approaches to measuring disease frequency, association, and impact and which measures are applicable to various study designs. (Competencies 1, 2, 4, 8, 9, 10)
3. Evaluate the potential for confounding and interaction in epidemiologic data and understand several approaches for addressing these validity issues in epidemiologic research. (Competencies 14, 15)
4. Perform and interpret stratified analysis of epidemiologic data for point and interval estimation of measures of association for typical study designs. (Competencies 2, 3)
5. Be familiar with the interpretation, strength, limitations, and assumptions associated with using various statistical modeling procedures for the analysis of epidemiologic data.
6. Evaluate epidemiologic literature in a systematic and critical manner in assessing the “state-of-the science” and appreciate the issues associated with sample size estimation and the precision of estimates in the design and evaluation of epidemiologic research. (Competencies 4-10, 13, 14)
**Summary of Important Dates:**

<table>
<thead>
<tr>
<th>Topic Assignment</th>
<th>Date by the beginning of the class</th>
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<tbody>
<tr>
<td>Problem Set # 1</td>
<td>on September 9</td>
</tr>
<tr>
<td>Problem Set # 2</td>
<td>on September 30</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>in class (October 7)</td>
</tr>
<tr>
<td>Problem Set # 3</td>
<td>on October 28</td>
</tr>
<tr>
<td>Problem Set # 4</td>
<td>on November 18</td>
</tr>
<tr>
<td>Final Exam</td>
<td>in class (December 2)</td>
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<tr>
<td>Data Project</td>
<td>Finals’ week (December 6)</td>
</tr>
<tr>
<td>Date</td>
<td>Topic Assignment</td>
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<tr>
<td>Week 2</td>
<td>Issues in the Design of Epidemiologic Studies</td>
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<tr>
<td>Week 3</td>
<td>Measurement of Disease Occurrence</td>
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<tr>
<td>Week 4</td>
<td>Measurement of Association</td>
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<tr>
<td>Week 5</td>
<td>Bias (Selection and Information)</td>
</tr>
<tr>
<td></td>
<td>**Problem Set #1 Due <strong>BY the beginning of the class on 9/9</strong></td>
</tr>
<tr>
<td>Week 6</td>
<td>Analysis I: Stratified Analysis and Confounding</td>
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</tbody>
</table>
| Week 7 | Analysis II: Trends for Rates, Ecologic Studies | Rosenberg D. Trend analysis and interpretations.  
| Week 8 | Analysis III: Interaction Assessment  
**Problem Set #2 Due BY the beginning of class on 9/30** | Chapter 6 Szko  
| Week 9 | Sample Size Estimation/ Study Implementation  
**IN-CLASS MIDTERM EXAM** | Chapter 8 Szko  
Sample size readings to be posted/distributed in class.  
Data management and analysis readings to be posted/distributed in class. |
| Week 10 | Multivariable Analysis | Chapter 7 Szko  
| Week 11 | Logistic Regression | Kleinbaum D. Chapter 1. Introduction to logistic regression. In Logistic Regression: A Self-Learning Text -- to be distributed/posted online. |
| Week 12 | Logistic Regression II  
**Problem Set #3 Due BY the beginning of class on 10/28** | Kleinbaum D. Chapter 6. Modeling strategy guidelines. In Logistic Regression: A Self-Learning Text -- to be distributed/posted online. |
| Week 13 | Logistic Regression II Continues | Apply knowledge acquired and skills developed throughout the course. |
| Week 14 | Review and Intro to **Data Project (due by 12/06)** |  |
| Week 15 | Review and **Problem Set #4 Due BY class time 11/18** | Review. |
| Week 16 | **Final Exam** | Review |

The lecture schedule is subject to change depending on the schedules of the faculty, as well as perceived need to make the most out of the in-class meetings. Students will be given notice in the event that a change needs to be made to the schedule. Samples of your work may be reproduced including, but not limited to, 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:**
This doctoral course is offered in a face-to-face format. When/if needed, it can be moved and delivered online using the Folio system, in which case students will be made aware of the change. Homework assignments, midterm and final examinations, and data project constitute the basis of student evaluation. Students are expected to make use of instructor’s office hours (if needed, virtually) and in-class meetings to discuss concepts or difficulties they may have.

**Evaluation:**
Your final course grade will be assigned according to the following:

A (100% – 90%; 900 – 100 points) – high achievement;
B (89% – 80%; 800-899 points) – satisfactory achievement;
C (79% – 70%; 700 – 799 points) – minimum passing grade;
Failing grade (≤69%; ≤ 699 points)

Course grades will be based upon evaluation of the following activities:

<table>
<thead>
<tr>
<th>Assignments and Tests</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-term examination (in class)</td>
<td>200</td>
</tr>
<tr>
<td>Problem Sets (4)</td>
<td>400</td>
</tr>
<tr>
<td>#1 Measures of frequency and association</td>
<td>100</td>
</tr>
<tr>
<td>#2 Case control, confounding, and other biases</td>
<td>100</td>
</tr>
<tr>
<td>#3 Interaction assessment</td>
<td>100</td>
</tr>
<tr>
<td>#4 Multiple logistic regression</td>
<td>100</td>
</tr>
<tr>
<td>Applied data analysis project</td>
<td>200</td>
</tr>
<tr>
<td>Class participation (class participation)</td>
<td>100</td>
</tr>
<tr>
<td>Final exam</td>
<td>100</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1000</td>
</tr>
</tbody>
</table>

**Blinded grading** will be employed throughout the course. Be sure to put the last 4 digits of your Eagle ID on your assignments instead of your name. **Any assignments with names or without proper identification will be ungraded until corrected and subject to the late submission policy.**
Late Submissions

Late assignments are penalized at 15 points (out of total number of points for the assignment) for each calendar day late. The maximum penalty is 3 calendar days late; after that, your assignment will not be graded and counted as “0” points.

Midterm Exam: There will be an in-class mid-term exam. The exam will emphasize material covered in the assigned readings, posted online materials, and assignments through the exam date (inclusive).

Final Exam: The final exam will cover material in the assigned readings, posted online materials, and assignments for the entire course but emphasize the topics following the midterm exam. In the event that you have circumstances that make it difficult to take the exam at the scheduled original time, please notify the instructor of this issue at least 2 weeks prior to the exam so that other arrangements can be made.

Problem Sets: The problem sets are to be submitted (in a typed format, preferably) to the appropriate Dropbox in Folio according with the due dates indicated in the syllabus. If several of you want to submit their homework assignments to the instructor, you can do so before class begins. The assignments involve applied computation relevant to epidemiologic analysis. The assignments must be a student’s own work (i.e., each student must turn in a completed assignment), but students are encouraged and allowed to work together in solving the problems and assisting each other with the exercises. Selected portions of the problem sets may be discussed in the class.

Applied Data Project: The analysis project for the course requires that you apply some of the analytic techniques that we will be discussing to the analysis of a real dataset. The primary objective of this assignment is to provide you with further experience in the interpretation and presentation of epidemiologic data. Your course instructor will be selecting one or two datasets that will be used for this project. The datasets will be accessible via Folio as either SPSS, SAS or Stata files. The files can be converted into formats of other statistical packages if needed. Documentation of the variables in the dataset and guidance regarding the data collection procedures to generate the dataset will be given. In addition, some general research questions will be provided and perhaps a brief sketch of an analysis plan. However, the operational decisions regarding how to analyze the data will be made by you. Additional information on this project will be distributed in class.

This course and the project are premised on the conviction that the best way to learn about epidemiologic methods is to PRACTICE them – not just read about them.

Class Participation: Students enrolled in the class are expected to have read the assigned readings prior to the class. The instructor may designate certain students to be responsible for leading the discussion of an assigned reading as part of the class participation grades. Students will be advised in advance about which readings they are responsible for in leading the discussion. However, it is expected that all students will read the material and be prepared to address questions on the readings for each weekly session.
Inclusive Excellence at Georgia Southern University

At Georgia Southern University, we are committed to supporting our students and fostering an environment that is free of bias, discrimination, and harassment in the classroom and in the broader University community. As such, we have an expectation that our learning community is inclusive and respectful. Our diversity may be reflected by differences in race, culture, age, religion, sexual orientation, gender identity, ability, political beliefs, socioeconomic background, and myriad other social identities and life experiences. The goal of inclusiveness, in a diverse community, encourages and appreciates expressions of different ideas, opinions, and beliefs, so that conversations and interactions that could potentially be divisive turn instead into opportunities for intellectual and personal enrichment.

We are a faculty that strives to model reflection, advocacy, and care for the community in order to work toward an equitable, democratic, and sustainable society. We value your participation in this process. If you believe that our courses, programs, or department fall short of this commitment, we encourage you to engage in dialogue with us.

General Expectations

1. For every one-credit hour, you should expect to work roughly two hours outside the classroom each week. For example, for a three-credit hour course, during a regular fifteen week semester, you should expect approximately ninety hours of work outside of class.

2. Students are expected to keep up with the class, to read the required material, and to submit assignments and activities by due dates and times.

3. Students are expected to independently complete all activities, exercises, assignments, and assessments including exams.

4. Students are expected to produce quality work. Typos and grammar errors should be kept to a minimum. The format and readability of submissions will be taken into consideration when assigning a grade.

5. Remember to check when assignments are due. It is recommended that you stay ahead of schedule on the assignments, so if an emergency happens, your assignment will be completed and ready to submit within the designated time frame. It is your responsibility to keep track of the due dates for each assignment.

Response Times

During a normal work week (i.e., Monday 9:00 AM through Friday 5:00 PM) students can expect responses as follows:

- Email: within 48 hours
- Discussion posts: within 72 hours
- Assignment grades: within 72 hours of submission date.

Exceptions: I may not check FOLIO or GSU email over the weekends. If you send me an email after 5:00 PM on Friday, please do not expect a response until the following Monday.
All assignments will be graded promptly so that students may accurately calculate their grades at any point in time during the semester. 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. Extensions are not guaranteed and will be granted solely at the discretion of the instructor.

**Course Expectations**

**Texting and Use of Cell Phones (and Other Technologies)**

Please do not text in class or use your cell phone during class! Texting during class (or in a meeting) is disruptive and rude…at least to me. My preference is that you put cell phones away during class meetings so they are not a source of temptation. Offenders will be asked to leave.

**Instructor Expectations**

1. I expect you to attend every one of the four class sessions. The components are highly interrelated; missing a class will detract from the learning potential of subsequent sessions, as well as your evaluation of in-class discussion.
2. I expect you to be in the classroom and prepared to begin work at the scheduled starting time for each session.
3. I expect you to actively participate in the discussions. This is not the type of class where you can “sit back and listen.”
4. I expect you to submit written assignments using proper English grammar, syntax, and spelling. You are encouraged to use spell check and grammar check prior to submitting your written work. The University Writing Center is available to anyone who may need assistance (http://class.georgiasouthern.edu/writingc/). Grammar, syntax, and spelling will account for 10% of the grade for each assignment.
5. I expect (and encourage) you to provide honest and timely feedback regarding the content and process of this course throughout the semester.
6. I expect (and encourage) you to share the responsibility for making this course an enjoyable and beneficial learning experience.
7. Wikipedia cannot be used as a cited reference as noted by a co-founder of Wikipedia! You may use Wikipedia to identify appropriate source material. Remember Wikipedia is not peer reviewed!
8. I require that each learner will utilize the APA Publication Manual as a guide for writing papers for this course and the grading rubric will be based on its precepts.
Class Attendance and Participation Policy

Federal regulations require attendance be verified prior to distribution of financial aid allotments. Regular attendance is expected. Your attendance will be verified at the first regular class session.

It is the policy of the University to permit students, faculty, and staff to observe those holidays set aside by their chosen religious faith. The faculty should be sensitive to the observance of these holidays so that students who choose to observe these holidays are not seriously disadvantaged. It is the responsibility of those who wish to be absent to make arrangements in advance with their instructors.

Students participating in authorized activities as an official representative of the University (i.e., athletic events, delegate to regional or national meetings or conferences, participation in university-sponsored performances, and JPHCOPH funded) will not receive academic penalties and, in consultation with the instructor of record, will be given reasonable opportunities to complete assignments and exams or given compensatory assignment(s) if needed. The student must provide written confirmation from a faculty or staff advisor to the course instructor(s) at least 10 days prior to the date for which the student will be absent from the class. The student is responsible for all material presented in class and for all announcements and assignments. When possible, students are expected to complete these assignments before their absences. In the event of a disagreement regarding this policy, an appeal may be made by either the student or the instructor of record to the corresponding college dean. (University Graduate Catalog)

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.

Plagiarism:

According to the Academic Dishonesty Policy of Georgia Southern University, 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) 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:
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 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.

**CONFIDENTIALITY**
In accordance with provisions of the Family Educational Rights and Privacy Act of 1974 and the Georgia Open Records Act, any information related to a violation of academic dishonesty or the outcome of a judicial hearing regarding academic dishonesty, is prohibited and must be treated as confidential by members of the faculty."
**Disability-related Accommodations**
Georgia Southern University is committed to providing reasonable accommodations to students with documented disabilities as required under federal law. Disabilities may include ADD or AD/HD, autism spectrum disorder, brain injury, chronic medical conditions, communication disorders, hearing loss, learning disabilities, mobility impairment, psychological disorders, visual impairment or temporary injuries. The purpose of disability accommodation is to provide equal access to the academic material and equal access to demonstrate mastery of the material. If you have a disability and need accommodations, please contact the Student Accessibility Resource Center (SARC). You will need to meet with a SARC staff member who can help you gather documentation of your disability or refer you to an appropriate resource for assessment. Once documentation of the disability is approved, SARC staff will provide you with an accommodation letter detailing the approved accommodations which you should present to me so we can discuss and implement your accommodations. Disability accommodations work best starting at the beginning of the semester, but can be approved and started at any point in the semester. Accommodations start at the time the accommodation letter is presented to faculty within reasonable timelines; accommodations are not given retroactively. SARC on the Statesboro campus is located on the second floor of Cone Hall and the phone number is (912) 478-1566. SARC for Savannah and Liberty campuses is located on the second floor of Memorial College Center and the phone number is (912) 344-2572.

**Basic Needs Statement**
Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students Office for support. The Dean of Students Office web address is https://students.georgiasouthern.edu/dean. You may also reach the Dean of Students Office for the Statesboro campus at (912) 478-3326 or deanofstudents@georgiasouthern.edu. For the Armstrong and Liberty campuses, you can also reach the Dean of Students Office at (912) 344-2514 or rmdeanofstudents@georgiasouthern.edu. Furthermore, please notify the professor if you are comfortable in contacting the Dean of Students Office for support. This will enable the professor to provide any other resources that they may possess.

**University Calendar for the Semester**
The University Calendar is located with the semester schedule, and can be found at:
http://em.georgiasouthern.edu/registrar/resources/calendars/

**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 to ensure better student learning. The instructor will announce any such changes in class. It is the responsibility of the student to know what changes have been made in order to successfully complete the requirements of the course.

This syllabus, my lecture notes, and all materials distributed and presented during this course are protected by copyright law. You are authorized to take notes in this class but that authorization extends to only making one set of notes for your personal use and no other use. You are not authorized to sell, license, commercially publish, distribute, transmit, display, or record notes from this class unless you have my written consent to do so.
STUDENT CONDUCT CODE
The Student Conduct Code is the official University publication governing student conduct and behavior. It is the responsibility of each student to become familiar with the rules and regulations governing student life. Student conduct procedures, appeal procedures, and disciplinary sanctions are found in the Student Conduct Code at http://students.georgiasouthern.edu/conduct. I acknowledge that I have read and understand this statement referencing the Student Conduct Code.

ACADEMIC DISHONESTY
The University goal is to foster an intellectual atmosphere that produces educated, literate people. Because cheating and plagiarism are at odds with that goal, they shall not be tolerated in any form. Students are expected to adhere to the rules and regulations as set forth in the Student Conduct Code. Therefore, all work submitted by a student must represent that student's own ideas and effort; when the work does not, the student has engaged in academic dishonesty. Plagiarism occurs when a person passes in another person's work as his or her own, borrows directly from another person's work without proper documentation, and resubmits his or her own work that has been previously submitted without explicit approval from the instructor. For example, academic dishonesty occurs whenever a student participates in any of the following: Cheating submitting material that is not yours as part of your course performance; using information or devices that are not allowed by the faculty; obtaining and/or using unauthorized materials; fabricating information, research, and/or results; violating procedures prescribed to protect the integrity of an assignment, test, or other evaluation; collaborating with others on assignments without the faculty’s consent; cooperating with and/or helping another student to cheat; demonstrating any other forms of dishonest behavior. Plagiarism directly quoting the words of others without using quotation marks or indented format to identify them; using sources of information (published or unpublished) without identifying them; paraphrasing materials or ideas without identifying the source; self-plagiarism - resubmitting work previously submitted without explicit approval from the instructor; unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic material. NOTICE: The list above is intended only to provide general guidelines for recognizing and avoiding common types of academic dishonesty. It is in no way an exhaustive or comprehensive list of all the types of academic dishonesty. For more information about academic honesty, see the Student Conduct Code at http://students.georgiasouthern.edu/conduct. I acknowledge that I have read and understand the Academic Dishonesty Policy.

I have read the syllabus and understand the contents and course requirements.

________________________  ____________________  _________________
Student Name (print)       Student Signature       Date