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Fall 2016

### PUBH 6533 - Epidemiology

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**Georgia Southern University**  
**Jiann-Ping Hsu College of Public Health**

PUBH 6533– Epidemiology  
Fall 2016

<b><u>Instructor:</u></b>	Chun Hai (Isaac) Fung, PhD
<b><u>Office:</u></b>	Hendricks Hall, Room 2029
<b><u>Phone:</u></b>	(912) 478-5079
<b><u>E-Mail Address:</u></b>	cfung@georgiasouthern.edu
<b><u>Office Hours:</u></b>	Tuesday, 3.30PM to 7.00PM. Appointments are highly recommended.
<b><u>Class Meets:</u></b>	Tuesday & Thursday, 11:00AM to 12:15PM (IT Bldg – Room 2205)

Course Catalog available at:

<http://students.georgiasouthern.edu/registrar/pdf/catalogs/GraduateCatalog/index.htm>  
under Jiann-Ping Hsu College of Public Health Programs

**Prerequisites:** N/A

**FOLIO address:** <http://my.georgiasouthern.edu>

**Catalog Description**

This course provides an introduction to many important topics in epidemiology for public health practice, including but not limited to the evolution of the discipline, causal concepts in the natural history of disease, critical features of infectious and chronic diseases, elements of public health screening, basic measures used in epidemiology, design of epidemiologic investigations, consideration of random error and systematic bias, calculation and interpretation of confidence intervals and  $p$  values, discussion of confounding and interaction, criteria for evaluation of cause and effect relationships and the implications for ethical public health practice. Students are expected to gain a foundation in epidemiologic methods for exploration of the causes and conditions that influence the origin, propagation, mitigation, and prevention of diseases that impact population health.

**Required Textbook:**

Friis RH and Sellers TA. *Epidemiology for Public Health Practice (5<sup>th</sup> Ed.)* Boston, MA: Jones and Bartlett Publishers. (ISBN: ISBN-13: 978-1449665494  
ISBN-10: 1449665497). For more info, see Amazon.com:  
<https://www.amazon.com/Epidemiology-Public-Health-Practice-Friis/dp/1449665497/>

**Required Resource:**

Calculator (Note: You CANNOT use a cell/smart phone as a calculator)

### **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 72 hours
- Assignment grades/evaluation: in 1 week

Notes:

- 1) Do not expect me to read your emails over the weekends. If you send me an email after 5:00 PM on Friday, I may not respond until the following Monday.
- 2) My Mondays and Fridays are dedicated to my research. Therefore, I do not handle teaching-related matters on Mondays and Fridays.
- 3) I do research and prepare for classes on Wednesday. Therefore, I prefer not to be interrupted while I am preparing for classes.

### **MPH Core Student Learning Outcomes (CORE)**

1. Demonstrate proficiency and effectiveness in the communication of core public health principles and practices, both oral and written.
2. Demonstrate proficiency in the integration of the core public health disciplines (Biostatistics, Epidemiology, Environmental Health, Health Policy/Management, and Social/Behavioral Science) in practice and research.
3. Demonstrate proficiency in problem solving, critical thinking, and public health leadership.

### **MPH Epidemiology Student Learning Outcomes (EPID)**

1. Formulate population-based hypotheses and develop appropriate research designs to test these hypotheses.
2. Collect, analyze, and interpret data derived from population-based research.
3. Create and implement public health surveillance systems for population-based studies.
4. Recommend evidence-based interventions and control measures in response to epidemiologic findings.
5. Communicate epidemiologic principles and concepts to lay and professional audiences through both oral and written communication.

### **Cross-Cutting Competencies for the MPH Degree**

1. Demonstrate effective written and oral skills for communicating with different audiences in the context of professional public health activities. (Communication and Informatics)
2. Use information technology to access, evaluate, and interpret public health data. (Communication and Informatics)
3. Describe the roles of history, power, privilege and structural inequality in producing health disparities. (Diversity and Culture)
4. Explain how professional ethics and practices relate to equity and accountability in diverse community settings. (Diversity and Culture)
5. Develop public health programs and strategies responsive to the diverse cultural values and traditions of the communities being served. (Diversity and Culture)

### **MPH Program Competencies in Epidemiology**

1. Identify key sources of data for epidemiologic purposes.
2. Identify the principles and limitations of public health screening programs.
3. Describe a public health problem in terms of magnitude, person, time and place.
4. Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.
5. Comprehend basic ethical and legal principles pertaining to the collection, maintenance, use and dissemination of epidemiologic data.
6. Apply the basic terminology and definitions of epidemiology.
7. Calculate basic epidemiology measures.
8. Communicate epidemiologic information to lay and professional audiences.
9. Draw appropriate inferences from epidemiologic data.
10. Evaluate the strengths and limitations of epidemiologic reports.

### **Performance-Based Objectives Linked to Course Activities (Note: Activities Described in Next Section)**

1. Students will demonstrate competence in the basic terminology associated with epidemiology. (Activity 1)
2. Students will demonstrate competence in the ability to calculate and interpret basic epidemiologic measures including, but not limited to incidence, prevalence, risk ratios, sensitivity/specificity, and predictive values. (Activity 2)
3. Students will demonstrate the ability to integrate basic concepts of epidemiology. (Activity 3, 6)
4. Students will demonstrate the ability to communicate epidemiologic concepts through writing to professional audiences. (Activity 4)
5. Students will demonstrate the ability to communicate epidemiologic concepts through presentation to lay and professional audiences. (Activity 5)
6. Students will demonstrate the ability to engage in basic practice of epidemiologists in the form of interviewing people in a (hypothetical scenario of) outbreak investigation. (Activity 6)

### **Assessment of Student Learning**

Activity 1: Use course lectures and class discussions to explain the basic terminology and definitions of epidemiology, including, but not limited to, prevalence, incidence, mortality rates, risk difference, etiologic/attribution risk fraction/percent, population etiologic/attribution risk fraction/percent, sensitivity, specificity, predictive values, percent agreement, kappa statistic, odds ratios, relative risk, confidence interval, bias, and confounding. Competence in basic terminology will be evaluated using two activities: (1) short weekly quizzes (2) three equally weighted exams.

Activity 2: Use course lectures, class discussions and class exercises to illustrate calculation and interpretation of basic epidemiologic measures including, but not limited to incidence, prevalence, risk ratios, sensitivity, specificity, and predictive values. Competence in the ability to calculate and interpret basic epidemiologic measures evaluated using two activities: (1) short weekly quizzes; and (2) three equally weighted exams.

Activity 3: Use course lectures, class discussions, and case studies to explain the basic application of epidemiologic principles, as well as the integration of these principles across the public health spectrum. Competence in the ability to integrate concepts will be evaluated using a critique of a journal article at the end of the semester.

Activity 4: Competence in written communication to the professional audience will be evaluated using a written critique of a journal article.

Activity 5: Competence in oral presentation will be evaluated using the Preparation and delivery of a PowerPoint presentation of a critique of a journal article.

Activity 6: Competence in basic skills in a (mock) food poisoning outbreak investigation.

### **Course Structure**

This course will use a combination of in-class sessions combined with FOLIO online learning modules to help you during the learning process and evaluate your progress. There is also a detailed explanation of the tools in Folio located in the *Course Structure* link in the *Course Orientation - Start Here* area of this course. Tutorials for Folio are located on your Folio main page, and there is a help link located in the upper right-hand corner of the Folio course. If you are having particular issues with FOLIO we can address them before or after class.

### **Online Learning Component**

Students must be motivated and responsible for keeping up with understanding what is expected and stay on task with due dates for quizzes, assignments, and other activities. You need to log into the course on a daily basis to check for messages and other important information. Do NOT wait until the last minute to do work that requires you to submit by a due date. Please know, too, that Folio goes down for maintenance on a regular basis; you'll find that information--Folio Maintenance Schedule--on the Folio home page where your courses are listed.

### **Netiquette**

Because online communication generally lacks visual cues common to face-to-face interactions, you are expected to follow these standards. Netiquette is a combination of Network Etiquette. Please abide by the following netiquette rules when communicating with your instructor and peers in this class.

- Be sensitive and reflective to what others are saying.
- Don't use all caps. It is the equivalent of screaming.
- Don't flame - These are outbursts of extreme emotion or opinion.
- Think before you hit the post (enter/reply) button. You can't take it back!
- Don't use offensive language.
- Use clear subject lines.
- Don't use abbreviations or acronyms unless the entire class knows them.
- Be forgiving. Anyone can make a mistake.
- Keep the dialog collegial and professional.

## Overview of the contents to be covered the semester

<i>Date</i>	<i>Topic</i>	<i>Assignment*</i>
Week 1: Aug 16 (T); Aug 18 (Th)	<u>Learning Module 1</u> Introduction; History & Scope of Epidemiology	Read Chapter 1
Week 2: Aug 23 (T); Aug 25 (Th)	<u>Learning Module 2</u> Practical Applications of Epidemiology <i>[Dr. Fung will be out of town to present in a conference. Aug 23: Dr. Kelly Sullivan Aug 25: Dr. Stuart Tedders ]</i>	Read Chapter 2 M2 Quiz Due: Aug 26
Week 3: Aug 30 (T); Sep 1 (Th)	<u>Learning Module 3</u> Measures of Morbidity & Mortality Used in Epidemiology	Read Chapter 3 M3 Quiz Due: Sep 2
Week 4: Sep 6 (T); Sep 8 (Th)	<u>Learning Module 4</u> Descriptive Epidemiology: Person, Place, & Time	Read Chapter 4 M4 Quiz Due: Sep 9
Week 5: Sep 13 (T); Sep 15 (Th)	<u>Learning Module 5</u> Sources of Data for Use in Epidemiology	Read Chapter 5 M5 Quiz Due: Sep 16
<b>Week 6: Sep 20 (T)</b>	<b>Exam 1 (Sep 20, 2016)</b>	
<b>Week 6: Sep 22 (Th)</b>	<b>NO CLASS</b>	
Week 7: Sep 27 (T); Sep 29 (Th)	<u>Learning Module 6</u> Study Designs: Ecologic, Cross-Sectional, Case Control	Read Chapter 6 M6 Quiz Due: Sep 30
Week 8: Oct 4 (T); Oct 6 (Th)	<u>Learning Modules 7</u> Study Designs: Cohort Studies <u>Learning Modules 8</u> Experimental Study Designs	Read Chapters 7, 8 M7 Quiz Due: Oct 5 M8 Quiz Due: Oct 7
Oct 6 (Th) <i>(Optional activity)</i>	<i>Optional: Disease Dynamics Seminar: Eduardo Undurraga, PhD, CDC Title: Cost-effectiveness evaluation of a novel community-based rabies surveillance program in Haiti Time: 12.30pm – 1.45pm Venue: Hendricks 3001</i>	-
Week 9: Oct 11 (T); Oct 13 (Th)	<u>Learning Modules 9</u> Measures of Effect <u>Learning Modules 10</u> Data Interpretation Issues	Read Chapter 9 M9 Quiz Due: Oct 12 Read Chapter 10 M10 Quiz Due: Oct 14
<b>Week 10: Oct 18 (T)</b> Note: Class time is changed to 12.30pm – 1.45pm	<b>Guest lecture: Disease Dynamics Seminar: Prof. Gerardo Chowell, PhD, Georgia State University Prof. Chowell will speak on computational epidemiology. The exact title is to be confirmed. Time: 12.30pm – 1.45pm Venue: Hendricks 3001</b>	-
<b>Week 10: Oct 20 (Th)</b>	<b>Exam 2 (Oct 20, 2016)</b>	
Week 11: Oct 25 (T); Oct 27 (Th)	<u>Learning Module 11</u> Screening for Disease in the Community <i>[ Oct 25: Dr. Jian Zhang (to be confirmed) ]</i> Class Presentations	Read Chapter 11 M11 Quiz Due: Oct 28 <b>October 27: Presentation #1 – 3</b>
Week 12: Nov 1 (T); Nov 3 (Th)	<u>Learning Modules 12</u> Epidemiology of Infectious Disease; <u>Learning Modules 14</u> Molecular & Genetic Epidemiology Class presentations	Read Chapters 12, 14 M12 Quiz Due: Nov 2 M14 Quiz Due: Nov 4 <i>(To be confirmed)</i> <b>November 1: Presentation # 4 – 6 November 3: Presentation # 7 – 10</b>
Week 13: Nov 8 (T); Nov 10 (Th)	Class presentations	<b>November 8: Class Presentations #11 – 17 November 10: Class Presentations #18 - 24</b>
Nov 10 (Th) <i>(Optional activity)</i>	<i>Optional: Disease Dynamics Seminar: Prof. King-Wa Fu, PhD, University of Hong Kong Prof. Fu will speak on digital epidemiology &amp; digital health communication. The exact title of the presentation is to be confirmed. Time: 12.30pm – 1.45pm Venue: Hendricks 3001 (to be confirmed)</i>	

Week 14: Nov 15 (T); Nov 17 (Th)	<u>Learning Modules 13 &amp; 15</u> Epidemiologic Aspects of Work & the Environment; Social, Behavioral, and Psychosocial Epidemiology <i>[Dr. Fung will be out of town to present in a conference. Nov 15: Dr. R. Christopher Rustin Nov 17: Dr. Claire Robb ]</i>	Read Chapters 13, 15 M13 Quiz Due: Nov 16 M15 Quiz Due: Nov 18
Week 15: Nov 22 (T); Nov 24 (Th)	Thanksgiving – NO CLASS	-
Week 16: Nov 29 (T)	Disease Detective: A foodborne outbreak investigation	-
Week 16: Dec 1 (Th)	<i>Class presentations</i>	<b>December 1: Class Presentations #25 - 31</b>
<b>Week 17: Dec 6 (T)</b>	<b>Final Exam (Dec 6, 2016)</b>	-
<b>Week 17: Dec 8 (Th)</b>	<b>NO CLASS</b>	-

**\*Textbook chapters should be read prior to the first class of the week.**

Samples of your work may be reproduced for research and/or teaching 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.

### **Exam Format, Guidelines and Schedule**

There will be three exams given of equal weight. The dates of the examinations are printed in the course schedule. The instructor will inform the class the exact format and delivery method of the examinations in due course.

### **Assignments/Evaluations**

#### Three Examinations: 75% of Final Grade

Exams may be any combination of true/false, multiple choice, matching, short answer, & discussion. Make-up exams will not be administered unless the absence is deemed excused. The validity of excused absences will be determined by the instructor and will be individually assessed (Activities 1 & 2).

#### Quizzes: 10% of Final Grade

Quizzes on the reading assignments will be administered each week to assess overall preparation in terms of material covered previously. The quizzes are designed to facilitate exam preparation and hold the student accountable for assigned reading. While points per quiz are minimal, inadequate preparation will have an adverse impact on student grades. They will be completed in FOLIO on the dates shown in the course schedule and calendar. Make up quizzes will not be given unless the absence is deemed excused. The validity of excused absences will be determined by the instructor and will be individually assessed (Activities 1 & 2).

#### Article Critique and PowerPoint Presentation: 10% of Final Grade

Please select a journal article on a topic of interest, published within the past 3 years, from a public health, epidemiology, or medical journal. The article must be submitted to me in the designated FOLIO discussion area and approved by me. Each journal article will be posted on FOLIO so other members may read it and comment in the student discussion forum if desired. Using the “Appendix A – Guide to the Critical Appraisal of an Epidemiologic/Public Health Research Article” in the required textbook, you will write a paper critiquing the article

The paper should be 5-7 pages (exclusive of title page, abstract, references, etc.), double-spaced, 12-pt font, 1-inch margins (Activities 3, 4 & 5).

You should also prepare a 10-minute PowerPoint presentation describing your article, the research involved, the findings and your evaluation of the article and the research. This will be presented in class.

Mock food poisoning outbreak investigation activity: 5% of Final Grade. You are expected to participate in the Mock food poisoning outbreak investigation activity (Activity 6).

### **Grading**

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

Exam 1	25%
Exam 2	25%
Final Exam	25%
Quizzes	10%
Article Critique and PowerPoint Presentation	10%
Mock food poisoning outbreak investigation activity	5%

The following scale will be utilized in grading:

89.5% - 100%	A
79.5% - 89.4%	B
69.5% - 79.4%	C
59.5% - 69.4%	D
< 59.4%	F

All exams and assignments will be graded and returned promptly so that students may accurately calculate their grades at any point during the semester.

There are times when extraordinary circumstances occur (e.g., serious illness, death in the family, etc.). In such circumstances, 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.

**NO EXTRA CREDIT PROJECTS WILL BE ASSIGNED!**

### **Optional activities**

Optional activities are listed as “Optional” in the Course Schedule. I highly encourage students to attend. However, there are no extra credit conferred.

### **Expectations**

While learning Epidemiology will involve a considerable amount of mathematical calculations, Epidemiology is not just numbers. Understanding what the numbers you calculate *mean* and how they are interpreted is ***critical*** to your success in this course and as a public health professional. How I present numbers with labels and interpretation in the lectures is how I expect for you to do the same in your assignments. Your answer should have meaning when separated from the work leading up to the final answer. Similarly, on assignments and exams, when I ask for an interpretation I expect that you will provide an interpretation that is relevant to the problem you



are working on. It is not enough to say that “people with the exposure were 2.5 times more likely to have disease.” Your interpretation should be stated as (e.g., in a smoking and lung cancer question) “People who smoked were 2.5 times more likely to develop lung cancer than people who never smoked,” for example.

As some calculations in this course will require multiple steps leading to a final number, it is strongly suggested that you carry FIVE decimal places after the decimal throughout the calculation. Rounding up/down at every step can result in very different answers than what I have in my answer keys and is a source of propagation of error. Once you get to the final step, round to one/two decimal places depending on the magnitude of the association reported.

If you have ANY questions about how to report your results, write out your answers, carry decimal places, round off answers, select a constant, or anything else relevant to turning in assignments or writing exams, ask me ***before*** turning in the assignment or exam to avoid losing points.

### **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.

### **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 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>) 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>

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."

**University Calendar for the Semester**

The University Calendar is located with the semester schedule, and can be found at:  
<http://em.georgiasouthern.edu/registrar/>

**Portfolio Inclusion**

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.

**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 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.