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Public Health Syllabi

Public Health, Jiann-Ping Hsu College of

Fall 2016

PUBH 6541 01F - Biostatistics (Online)

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Course Syllabus

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Office Hours: Monday : 10am - 12pm & Tuesday: 10 am to 1pm. or by appointment or by Skype (id : harry2467)

Course Credit: This is a four-credit hour course designed to encompass more content than a standard three-credit hour course for the M.P.H. core curriculum. The additional credit hour will allow you time to navigate statistical software (SAS) in order to complete assignments, projects, and be prepared for exams.

Prerequisites: none

Catalog Description: This course examines statistics in public health and related sciences, including sampling, probability, basic discrete and continuous distributions, descriptive statistics, hypothesis testing, confidence intervals, categorical data analysis, regression, and correlation. Emphasis will be on the development of critical thinking skills and health data analysis applications with computer software.

Required Textbook: Le, Chap, T. (2003), *Introductory Biostatistics:* John Wiley and Sons.

MPH Core Student Learning Outcomes (CORE)

At the end of the MPH program, the students will be able to:

1. Demonstrate proficiency and effectiveness in the communication of core public health principle and practices, both oral and written
2. Demonstrate proficiency in integration of the core public health discipline (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 Biostatistics Concentration Student Learning Outcomes

At the end of MPH program, students will be able to:

1. Construct a public health and biomedical research questions from ideas, conditions, and events that exist in a rural and urban community, region, state, and nation using critical thinking skills.
2. Design an experiment, survey or clinical trials pertaining to a public health and biomedical research questions in order to collect the data needed to meet objectives of public health research.
3. Select appropriate statistical tools, methodology alternatives and graphical descriptive to analyze and summarize public health and biomedical data.
4. Interpreted results of biostatistical analyses so that valid and reliable conclusions regarding a public health and biomedical research question may be drawn from the analyses.
5. Communicate biostatistical principles and concepts to lay and professional audiences through both oral and written communication.

M.P.H. Biostatistics Competencies:

Upon graduation a student with an M.P.H. in Biostatistics should be able to:

1. Provide the biostatistical components of the design of a public health or biomedical experiment by: clarifying the research objectives or questions; determining data and endpoints to be collected appropriate for the objectives; translating the objectives into biostatistical questions via hypothesis testing or confidence interval frameworks; determining the appropriate sample size; and writing the statistical analysis section of the experiment.
2. Apply appropriate statistical analysis methods using SAS to analyze both categoricaland quantitative data.
3. Develop written and oral reports to communicate effectively to research investigators pivotal aspects of a study, including its design, objectives, data, analysis methods, results, and conclusions ensuring that results and conclusions are valid and reliable and address the research objectives.
4. Create a collaborative environment for working on written and oral reports and developing critical thinking skills.
5. Describe key concepts and theory underlying biostatistical methodology used in probability and inferential, analytical, and descriptive statistics

Performance-Based Objectives:

At the completion of this course, the student will be able to:

1. Demonstrate the understanding of fundamental probabilistic notions, properties, and applications to the analysis of public health and biomedical data. (Activity 1)
2. Demonstrate the capabilities to compute statistical quantities such as descriptive statistics, distribution functions, and more complex statistics. (Activities 1, 2 and 3)
3. Conduct statistical inference through defining hypotheses to be tested, type I error, type II error, p-value, and proper interpretation of the final results. (Activities 1, 2 and 3)
4. Perform simple and multiple regression, logistic regression, survival data analysis and interpret the statistical output to make proper inference. (Activities 1, 2 and 3)
5. Develop the skills of statistical computation, report writing, and oral presentations to effectively *communicate*biostatistical analysis of a public health study. (Activities 1, 2, 3 and 4)

Assessment of students learning

Activity 1: Use course lectures and class discussions to explain the basic terminology and definitions of biostatistics, including but not limited to, fundamental probabilistic notions, properties, and applications to the analysis of public health, biomedical data descriptive statistics, distribution functions, more complex statistics, statistical inference through defining hypotheses to be tested, type I error, type II error, p-value, proper interpretation of the final results, simple and multiple regression, logistic regression, and survival data analysis. Competence in basic terminology will be evaluated using two activities: (1) weekly homework (2) two equally weighted exams.

Activity 2: Use course lectures, class discussions and class exercises illustrate calculation and interpretation of basic biostatistical measures, including but not limited to, probabilities, descriptive statistics, distribution functions, more complex statistics, statistical inference, estimation and hypotheses testing, type I error, type II error, p-value, simple and multiple regression, logistic regression, and survival data analysis. Competence in biostatistical measures will be evaluated using two activities: (1) weekly homework (2) two equally weighted exams.

Activity 3: Use course lectures, class discussions and real data projects to explain the basic applications of biostatistical principles, as well as the integration of these principles across the public health spectrum. Competence in ability to integrate concepts will be evaluated using final class project using real data.

Activity 4: Competence in written and oral communication to the lay professional audience will be evaluated using final project written report evaluation.

Assignments and Discussions: Assignments account for 40% (10% project and 30% assignments and discussions) of your course grade. The table below lists assignments for each chapter to be covered throughout the class. You may work together or individually on these assignments, however each student must submit his/her own assignment and state with whom he/she worked, if applicable.

What does 'working together' mean? You are welcome to solve problems and discuss explanations in groups; however **it is NOT acceptable to submit assignments with identical wordings and explanations**.

Assignments must be submitted by the due dates and via Dropbox for each module. **Extra Notes are available in a Separate Module. The data needed for some of your homework are in a separate module. SAS computational Software is required to do some of the homework questions.**

Instructional Methods:

Date	Topic	***Readings***	***Assignment***	***Due Date for Assignment***
Week 1& 2	Descriptive Methods for categorical data	Chapter 1	1, 2, 8, 10, 12, 13, 15, 20, 25, 31, 39	8/24/2016
Week 3& 4	Descriptive methods for continuous data	Chapter 2	2, 5, 6, 20, 23, 29	9/7/2016
Week 5&6	Probability and Probability Models	Chapter 3	1, 2, 3, 5, 7, 8, 15, 18, 19	9/21/2016

Week 7&8	Estimating Parameters	Chapter 4	1, 5, 6, 7, 13, 20, 24, 31	10/5/2016
Week 9	Introduction to Statistical Tests of Significance	Chapter 5	1, 2, 6, 9, 10, 12, 15	10/12/2016
Week 10	Comparison of Population proportions	Chapter 6	1, 2, 5, 10, 15, 21, 27	10/19/2016
Week 11	Comparison of Population Means	Chapter 7	1, 2, 5, 14, 16, 22, 23	10/26/2016
Week 12	Correlation and Regression	Chapters 8	1, 5, 6, 9, 10,11, 12	11/2/2016
Week 13	Logistic Regression	Chapters 9	1	11/09/2016
Week 14	Count Data	Chapters 10	1	11/16/2016
Week 15	**Thanks Giving Break**			
Week 16	Survival Analysis	Chapters 11	5, 8, 9, 12, 14	12/31/2016
Week 17	Final Exams			12/07/2016

Class meeting will be a combination of lecture, class discussion and active participation.

PowerPoint presentations (you can find and download from Folio) will be used in the lecture portion of this course. Prior to each lecture, the student is encouraged to complete the recommended reading and actively participate in the class discussion. In this way, it is hoped that the learner will be better prepared to successfully accomplish the learning objective of each lecture experience.

Exam Schedule and Final Exam:

Mid-term Exam (30%) on TBA **(**Activities 1 & 2)

Project (10%) (Activities 3 & 4)

Final Examination (30%): Tuesday, May 4, 2016: at 12:30-2:30 PM (Activities 1 & 2)

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

Mid-term Exam (Activities 1 & 2) 30%

Final Exam (Activities 1 & 2)	30%
Assignments and Final Project (Activities 1, 2, 3 and 4)	40%
	100%

The following point scale will be utilized in grading:

[90%-100%]	A
[80%-90%)	B
[70%-80%)	C
[60%-70%)	D
[0%-60%)	F

Your grades ***will*** be posted in folio. 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.

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

IMPORTANT: For all exams and any hand-written assignments, please make certain that your hand-writing is legible.

University Writing Center: For those of you who may need assistance with improving your writing for assignments, the data analysis project, or for general writing, I encourage you to visit the University Writing Center. To learn more, visit their website:http://class.georgiasouthern.edu/writingc/.

Computing: In a world where technology is increasingly pertinent to everyday tasks, we will learn how the statistical software packages *SAS*is used in simplifying statistical computation and analysis.

You can Purchase a student copy of SAS as follows: 1- Sign in My.Georgiasouthern.edu account. 2- Go down to Discount Software and click on it. 3- Go and click to Personal Store. 4. Sign in or create an account and sign in. 5- Click on Software and then on SAS. 6- Click on the Software and add to the cart. OR you can have a virtual access to University edition of SAS free of charge by going on SAS UNIVERSITY EDITION website.

Academic Integrity: Students are expected to follow guidelines outlined in the *Academic Dishonesty* policy found online in the course catalog. Any student found in violation of academic honesty will receive a grade of 'F' for the course. It is the student's responsibility to familiarize him/herself with the student policies and expectations set forth in the online GSU *Catalog.*

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/conduct/resources/faculty/academic-dishonesty/) 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/conduct/resources/faculty/academic-dishonesty/
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).

1. 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 students 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:

1. 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 Deans level will ensure that the students work is evaluated in an appropriate manner.

Attendance Policy & Class Participation: Federal regulations require attendance be verified prior to distribution of financial aid allotments. So attendance of all clasess is required.

Disclaimer: 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 you 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