BIOS 600 Syllabus

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Course Information:

Class: 9:30 - 10:45 Tuesday Thursday, Rosenau 133
Lab: 11:00 - 12:50 Monday, Rosenau 201A, starting September 14

Course Description:

Bios 600 is an introductory course in probability and statistical inference. This course serves as an introduction to the collection, summarization, analyzation and presentation of data. Topics include sampling, measurement, descriptive statistics, probability, tests of hypotheses, confidence intervals, two-sample t-tests, ANOVA, simple linear regression, 2-way tables, and the chi-square distribution. Upon completion, students will have an understanding of some of the main areas of probability and statistics including a working knowledge of basic summary statistics, graphs, simple statistical tests for hypothesis testing, ANOVA, and regression analysis. Students will have the resources to use statistical software and be prepared for further courses in biostatistics, such as BIOS 665.

Prerequisites:

Students are expected to have a basic knowledge of mathematics and algebra. For in class quizzes and test, a basic calculator will be needed. For homework, access to a computer with statistical software is necessary. It is *NOT* necessary to know a statistical software package prior to this class.

Textbook:

Required: B. Burt Gerstman, *Basic Biostatistics: Statistics for Public Health Practice*, Jones and Bartlet, 2008

Course Schedule:

The course schedule will closely follow *Basic Biostatistics* with a few additionally topics at the end of the course.

Lab Section:

The Lab section will be used to learn basic functions on common statistical software. The software packages to be covered are EXCEL 2007 and SAS 9.1/9.2. These packages are available to every UNC student and accessible in most computing labs on campus. This lab is not required and no advantage will be given to students who attend. All materials used in the Labs will be available to all students. If a student cannot attend the Lab and needs tutoring in one of these software packages for this class, office meetings with the instructor can be arranged. It is important to note that for homework assignments, students may use whatever software they choose, but only EXCEL 2007 and SAS 9.1/9.2 will be covered in the Lab.

Homework Assignments:

Homework will be assigned periodically to help gauge the students understanding of the material. Homework will be due the next class period after it is assigned. There will be 7 homework assignments. Most problems will be assigned from *Basic Biostatistics*. Most assignments will have problem(s) from a Globalization Activity to help reenforce the global nature of public health, covered more in depth in the Global Topics section. Students are encouraged to work together but all submitted answers will be typed/written by the individual who submits the assignment.

Exams and Quizzes:

There will be two during-term exams and a final exam. They will be closed book and comprehensive. The dates for the exams are September 24 and November 10. There will be three quizzes throughout the course. Quizzes will take place at the end of a class period and will be announced beforehand.

Grading:

The grading for each component of the student's final grade is as follows:

	Percent Grade
Homework	40
Quizzes	10
Exam 1 (September 22)	15
Exam 2 (November 10)	15
Final	20
Total	100

The grade breakdown is as follows:

	Percent Grade
A	92 - 100
B+	88 - 91.4
B	80 - 87.4
C+	77 - 79.4
C	70 - 76.4
D+	66 - 79.4
D	60 - 65.4
F	< 60

For those in the graduate school, an "H" will be equal to an "A", a "P" will be a "B" or "C", and "L" will be a "D", and an "F" is an "F".

Attendence:

Attendence will not be taken in this class. However, attendence is strongly recommended. The book and/or notes alone will give you the required information on the subjects but only going to class, seeing examples worked, and interacting with classmates will a student have the greatest chance of understanding the material.

Global Topics:

As part of their study of biostatistics, students are exposed to a variety of global public health topics. In effort to enrich students understanding of global public health issues, global content is incorporated in a variety of ways, including Global Health Activities and readings, lecture examples and test examples. For the purposes of this course, global content will be defined as "health problems that transcend national boundaries, that may be influenced by circumstances or experiences in other countries, and that are best addressed by cooperative actions, and solutions, whether they occur in developing countries, countries in advanced transition, or industrialized countries. Source: Institute of Medicine, Americas Vital Interest in Global Health, Washington DC, National Academies Press, 1997. Within many units, Global Health Activities will be used to highlight important statistical concepts using examples and journal articles centered on global health topics. Watch for the symbol,  **,to indicate that global content is being incorporated.**

Honor Code:

Exams and quizzes must will be completed without assistance from other students. Completed Homework assignments will not be copied from other students. If there is evidence that either of these have taken place, the student(s) will be referred to the Honor Court. Honor Court sanctions can include receiving a zero for the assignment, failing the course and/or suspension from the university. For more information on the UNC Honor Code and the Honor Court see http://honor.unc.edu/honor/index.html.

BIOSTATISTICS

Biostatistics is the development and application of statistical reasoning and methods in addressing, analyzing and solving problems in public health; health care; and biomedical, clinical and population-based research.

Competencies: Upon graduation a student with an MPH should be able to…

1. Describe the roles biostatistics serves in the discipline of public health.
2. Describe basic concepts of probability, random variation and commonly used statistical probability distributions.
3. Describe preferred methodological alternatives to commonly used statistical methods when assumptions are not met.
4. Distinguish among the different measurement scales and the implications for selection of statistical methods to be used based on these distinctions.
5. Apply descriptive techniques commonly used to summarize public health data.
6. Apply common statistical methods for inference.
7. Apply descriptive and inferential methodologies according to the type of study design for answering a particular research question.
8. Apply basic informatics techniques with vital statistics and public health records in the description of public health characteristics and in public health research and evaluation.
9. Interpret results of statistical analyses found in public health studies.
10. Develop written and oral presentations based on statistical analyses for both public health professionals and educated lay audiences.