

**SYLLABUS**  
**EPID CPH576a: Biostatistics in Public Health**  
**Spring 2008**

**Instructor:**

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**Introduction:**

This course introduces biostatistical methods and applications. We will cover [descriptive statistics](#), [probability theory](#), and a wide variety of [inferential statistical techniques](#) that can be used to make practical conclusions about empirical data. We will use a two-fold approach to mastery of this material. On the one hand, we will look in some detail at how statistical procedures are employed, and you will conduct a number of basic procedures by hand in order to fully understand the logic of statistics. In order to complete this goal successfully, a prerequisite of at least one year of college mathematics is required. (Note that I will not check on this prerequisite formally, but you would be well advised to check with me if you have doubts about how well your background prepares you for this course). Additionally, you will learn how to use a computer package, Stata, in order to quickly perform statistical analyses in more complex situations. This combined approach will enable you to be an educated consumer and producer of statistical knowledge in the real world.

**Course Objectives:**

1. Determine the proper method to be used in analyzing data sets (e.g., parametric or non-parametric method? independent or paired samples?).
2. Apply your statistical knowledge to designing research studies. This includes computing the sample sizes necessary to show statistical significance and selecting the proper study design.
3. Better understand medical and scientific journal articles which frequently rely heavily on statistical procedures.
4. Perform basic statistical analysis using a computer statistical software package (Stata).
5. Be able to interpret computer outputs for the more commonly used statistical tests.

**Textbook:**

We will be using the 2nd edition of Principles of Biostatistics, by Pagano and Gauvreau, published by Duxbury Press. It is available in the Medical School Bookstore and can be also purchased online, too. This text comes with a CD that has data sets for use in homework problems. The data sets used in the homework are not in the chapter directories, but rather can be found in the exercise directory. You may also want to buy the Stata Survival Guide, which can be downloaded from the website of this course.

**Exams and assignments:**

There is also homework due often. For each homework, the answer key will become available for you after the due day, so that you know if you are getting the right answer or not. If you don't have the right answer, you know to keep working until you figure it out. This list has been compiled recently, and although it has been checked once, it is possible that it contains the occasional error. If you are in disagreement with the answer key, but keep getting the same 'wrong' answer, there is a slight possibility that the key contains an error. Check with me or the TA for confirmation if uncertain. **DO NOT** put off homework until the last minute! Doing the homework as soon as possible after the relevant material has been covered in lecture will make the task easier for you, and will maximally reinforce the material in your mind. **The best way to**

**excel on the exams is to master the homework.** Given the explicit scheduling of homework due dates and the logistical difficulty involved in large numbers of detailed answers, late homework assignments will not be accepted. Homework must be uploaded to the dropbox on the due date. Faxed and mailed submissions will not be accepted unless prior arrangements have been made (eg, due to travel to conferences, etc.). Note that most chapters have two homework assignments, one by typing in order to submit the homework electronically and one using Stata. Bearing in mind this definition of homework assignment, the **lowest four homework assignments** will be dropped. It is wise to save these drops for illness or emergencies. Please be neat and orderly in your homework assignments. Homework by typing and homework in Stata need to be submitted as separate files. Bold, highlight, or otherwise emphasize those that are obtained as computer output. Obviously, since you will have answers to most of the questions, the grading will focus on how you arrived at the answers. Therefore, for homework that is not legible and well organized, only partial credit will be awarded. On both homework assignments and exams, partial credit is doled out generously; my goal is to see that you are thinking statistically. Therefore, on exams and homework always show your work (again, be as neat and clear as possible). Exams and homework contribute to your final grade as follows:

Homework **15%**

Participation **5%** (5 discussions 1 point each; passive participation **will not** be credited.)

Quizzes **10%** (if you take **ALL** quizzes!)

Three Exams **70%** (**20%** each of two midterms; **30%** final)

### **Grading:**

Final grades are based on the following point system:

A = 90-100%

B = 80-89%

C = 70-79%

D = 60-69%

E = 59% or less

### **Announcements:**

A D2L course site will be created for this course. All course announcements will be posted on the site. So check out the course site constantly! In addition, a list of students taking this course can be found on the course site. Students can use the list to find their study partners and exchange experience.

### **Academic Integrity:**

Students are expected to abide by the University of Arizona Code of Academic Integrity found at <http://w3.arizona.edu/~studpubs/policies/cacaint.htm>.

### **Classroom Behavior:**

Students are expected to be familiar with the UA Policy on Disruptive Behavior in an Instructional Setting found at [http://hr2.hr.arizona.edu/dos/pol\\_disrupt.htm](http://hr2.hr.arizona.edu/dos/pol_disrupt.htm) and the Policy on Threatening Behavior by Students found at [http://hr2.hr.arizona.edu/dos/pol\\_threat.htm](http://hr2.hr.arizona.edu/dos/pol_threat.htm).

**COPH Grievance Policy:** College of Public Health students who believe they have been subjected to unfair treatment in the administration of academic policies may seek resolution of their complaints through the College of Public Health Grievance Process found at [http://w3.publichealth.arizona.edu/newcoph/students/3\\_greivance.htm](http://w3.publichealth.arizona.edu/newcoph/students/3_greivance.htm)

**SCHEDULE:**

<b>Week</b>	<b>Topic</b>	<b>Reading</b>
Week 0	Introduction	
Week 1	Data Types and Presentation	Ch. 1 and 2
Week 2	Numerical Summary Measures	Ch. 3
Week 3	Probability and Distribution	6.1, 6.2 and Ch. 7
Week 4	Sampling Distributions and Confidence Intervals	Ch. 8 and 9
Week 5	Exam 1	Ch. 1~9
Week 6	Hypothesis Testing	Ch. 10
Week 7	Comparison of Two Means	Ch. 11
Week 8	ANOVA	Ch. 12
Week 9	Nonparametric Testing Methods	Ch. 13
Week 10	Spring Break	
Week 11	Testing Proportions	Ch. 14
Week 12	Exam 2	Ch. 10~14
Week 13	Contingency Tables	Ch. 15
Week 14	Linear Regression	Ch. 17 and 18
Week 15	Multiple Linear Regression	Ch. 19
Week 16	Review Final Exam	
Week 17	Final Exam	