THE UNIVERSITY OF
ARIZONA®
MEL AND ENID ZUCKERMAN
COLLEGE OF PUBLIC HEALTH

Mel and Enid Zuckerman College of Public Health
University of Arizona

SYLLABUS
Biostatistics in Public Health
Epidemiology/Public Health 576A
Fall 2010

Time: Section 1: Tuesday and Thursday 12:30 – 1:45 pm
                               Section 2: Tuesday and Thursday 4:00 – 5:15 pm

Location: Section 1: Drachman A118
                               Section 2: Drachman A114

Instructor: Denise J. Roe, Dr.P.H.
                               Professor, Epidemiology & Biostatistics
                               A240 Drachman Hall
                               Telephone: 626-3975
                               droe@email.arizona.edu

Office Hours: Tuesday and Thursday 2:00 – 3:00 pm or by appointment

Teaching Assistants: Serena Baker (SAS)   sfbaker@email.arizona.edu
                               Rakesh Gaddam (STATA)   rgaddam@email.arizona.edu
                               Sadhvi Khanna (SAS)   skhanna@email.arizona.edu
                               Muhan Zhou (STATA)   mhz@email.arizona.edu

TA Lab Hours:

Day	Drachman A319	Online
Monday	2 pm – 3:30 pm (Khanna)	8 pm – 10 pm (Gaddam)
Tuesday	9:30 am – 11 am (Baker)	8 pm – 10 pm (Khanna)
Wednesday	9 am – 10:30 am (Zhou)	8 pm – 10 pm (Zhou)
Thursday	9:30 am – 11 am (Gaddam)	8 pm – 10 pm (Baker)

Course Description: This course introduces biostatistical methods and applications, and 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. Students will also be learning to use a statistical software package (STATA or SAS).

Course Prerequisites: One year of college-level mathematics

Course Learning Objectives: At the end of the course, you should be able to:

1. Identify the properties of given data sets, including the level of measurement for each variable.
2. Apply appropriate descriptive statistics to the data according to its measurement type.
3. Apply appropriate inferential statistics to the data according to its measurement type.
4. Formulate and test hypotheses.
5. Use a computer statistical software package (Stata or SAS) to accomplish objectives 2 - 4.
6. Apply your statistical knowledge to the design of research studies, including selection of proper research design and determination of sample sizes necessary to show statistical significance
7. Interpret and critique medical and scientific journal articles which frequently rely heavily on statistical procedures.

Course Notes: A webpage has been created for this class using the Desire 2 Learn (D2L) interface. The course website contains the syllabus, class notes, homework assignments, STATA do-files, datasets (used in lecture and for the homework) and readings.

Class announcements also will be posted on this site, so it is a good idea to check the site before each class to stay current.

To access the 576A website, login at: http://d2l.arizona.edu/index.asp
- Click the 'UA NetID' Login.
- Enter your NetID and password, as you would to access your UA email account.

    Under 'My Courses', click on: 'CPH EPID576A FA10 001-911 Roe'
      o News: This section contains any class announcements, such as changes in the homework schedule, etc.
      o Content: Access the syllabus, class notes, homework assignments and supplemental information in this section.

    For further information on how to use the D2L interface, go to:
    http://www.help.d2l.arizona.edu/tip_sheet

Note that D2L has a separate email system. Please remember to check it regularly. Alternatively you can configure it to forward your D2L email to your UA email account. The instructions are found at: http://help.d2l.arizona.edu/students/email#autoforward

Note that if you do not have a UA NetID, please see me so that I can give you access to the D2L site.

Required Text: *Principles of Biostatistics Second Edition*, Marcello Pagano and Kimberlee Gauvreau, Duxbury Press, Pacific Grove, CA, 2000

The text is available in the Medical School Bookstore. It 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. A copy of the text can be checked out from Anita Foley (206 FF).

Course Requirements:

1. **Read the text**
- Please bring questions about the text with you to the lecture

2. **Homework**
- The homework due date is noted on the syllabus.
- **Late homework assignments will not be accepted.** Homework must be turned in during class on the due date, or by 5pm in the bin outside my office door. Electronic and faxed submissions will not be accepted unless prior arrangements have been made (e.g., due to travel to conferences, illness, etc.).
- Scoring: Each part of the question is worth one point. For example, question 16 with three parts (a, b, c) is worth 3 points.
- Format: Please put the 'by hand" problems first, and then the 'Stata or SAS" problems second. The 'by hand' homework can be typed or handwritten. Circle or highlight numeric answers that you calculate by hand. Remember to show your work so that the Grader knows that you just did not copy the answer from the answer key. Bold, highlight, or otherwise **emphasize** those results that are obtained as computer output. Note, too, that sometimes you have to do a problem both by hand **and** in Stata or SAS – those cases are not typos.
- **Staple** your homework answers. Remember to put your **name** and your **section** number on the front page at least.
- Do each homework problem before consulting the answer key
- Answers are posted on the D2L website – it is your responsibility to check your homework against the answer key to ensure that the answer is correct
- Homework is checked for completeness only. Full credit if you try the homework even if you don't get the correct answer.
- Keep copies of all of your homework so that you can study for the exams while your submitted work is being graded by the Grader.
- You can drop your lowest two homework scores. It is best to reserve these for times that you are unexpectedly out of town, cannot turn in the homework due to illness, or your computer crashes with your homework on it.

3. **Analysis Papers**
- Three analysis papers are meant to give you an opportunity to integrate the pieces that you have learned throughout the course
- For each paper, you will be referred to a data set and given a hypothesis to test
- The format is specified in the D2L site
- **Late analysis papers will not be accepted.** They must be turned in during class on the due date, or by 5pm in the bin outside my office door. Electronic and faxed submissions will not be accepted unless prior arrangements have been made (e.g., due to travel to conferences, illness, etc.).

4. **Examinations**
- Two midterm exams
- A formula sheet for each exam is available on D2L and will be distributed with the exam.
- Practice exams with the correct answers are available using questions that have appeared on previous exams
- Please inform me ASAP if you are unable to take an exam on the scheduled exam date.

5. Final Project
- The final project is meant to give you an opportunity to show that you understand the scientific method and the role of biostatistics in answering a scientific question
- Students will select one paper from a list of papers on the D2L site and answer questions related to that paper
- The papers and format will be specified in the D2L site after the second midterm exam
- The final project **must** be turned in no later than the start of the scheduled final exam for your section. It may be turned in as early as the last day of class, but **may not** be turned in later than the start of your scheduled final exam. Electronic and faxed submissions will not be accepted unless prior arrangements have been made (e.g., due to travel to conferences, illness, etc.).

Grading/Student Evaluation: Homework, analysis papers, examinations and the final project contribute to your final grade as follows:

Homework	10% (each chapter weighted the same, even if length differs)
Analysis Papers	15% (5% each)
Two Exams	50% (25% each)
Final Project	25%

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

Grades will not be curved. The instructor reserves the right to revise this scale, if necessary.

Class Attendance/Participation: Class attendance is **strongly encouraged**, but not required. If a student misses class, they are responsible for meeting all course deadlines, and for working with other students, the TAs and the instructor (during office hours) to catch up. All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion. Absences pre-approved by the UA Dean of Students (or Dean's designee will be honored.)

Course Schedule: Any changes to the following schedule will be announced in lecture. You are responsible for obtaining information on any changes, even if you miss class.

Date	Topic	P&G Reading	Homework by Hand	Stata or SAS Homework	HW Due Date
8/24, 8/26	Data Types and Presentation	Chs. 1-2	2: 1-7, 16a	2: 8, 16b-c, 17-19	8/31
8/31, 9/2	Numerical Summary Measures	Ch. 3 (skip 3.3, 3.4)	3: 1-3, 7	3: 7, 12 (not 12b), 13, 15	9/7
9/7, 9/9	Probability	Ch. 6 (skip 6.5)	6: 1-5, 7-9, 13-15		9/14
9/14, 9/16	Probability Distributions	Ch. 7 (skip 7.3)	7: 1-3, 6-10, 13 (not 13c), 17-18		9/21
9/21	Sampling Distributions	Ch. 8	8: 1-6, 8, 11, 13		9/28
9/23	Confidence Intervals	Ch. 9	9: 1-5, 8	9: 8, 10, 12, 13	9/30
9/28	Review				
9/30	**Exam 1**	Ch. 2,3,6-9			
10/5, 10/7, 10/12	Hypothesis Testing	Ch. 10	10: 1-9, 14, 15	10: 10, 11, 16	10/19
10/14	Comparison of Two Means	Ch. 11	11: 1-4	11: 5-6, 9-10, 13	10/21
10/19, 10/21	Analysis of Variance	Ch. 12	12: 1-6	12: 10, 11, handout	10/28
10/26	Nonparametric Methods	Ch. 13	13: 1-5	13: 8, 10, 11, 13-14	11/2
	Analysis Paper 1				**11/4**
10/28, 11/2	Relative Risk & Odds Ratio, Contingency Tables	Ch. 6.5, 15	6: 18, 19 15:1-6	15: 8-10, 14, 19-20	11/9
11/4	Review				
11/9	**Exam 2**	Ch. 6.5, 10-13, 15			
	Analysis Paper 2				**11/16**
11/16	Correlation	Ch. 17	17:1-4	17:5-6	11/23
11/18, 11/23	Regression	Ch. 18	18:1-7	18:10-13	11/30
	Analysis Paper 3				**12/2**
11/30, 12/2	Multiple Regression	Ch. 19	19:1-7	19:8-11	12/7
12/7	Review				
Final Project Due				**Section 1: 12/16, 11 am** **Section 2: 12/14, 5 pm**	

Computer Labs: Stata and SAS are available for public use at two locations:

Drachman Hall Computing Lab: Drachman A319, open weekdays, from 8-5.
There are printers available free of charge if you want to print homework, etc, but you must supply your own paper.

Arizona Health Sciences Library Computer Lab: AHSC 2150, open every day 6am-midnight. These computers are behind the information/reference desk on the main floor. The first couple of banks of machines is not part of the lab, but is rather used for lit searching, etc. The lab is the 'walled off' section of computers behind the first couple of banks. You may print output here at the rate of 10 cents per page for black and white and 75 cents per page for color. Note that these are public facilities, and may or may not be crowded on a given day.

Students must register to use the AHSC Library Computer Lab at the Library Information Desk. A University of Arizona Catcard is required.

Purchasing STATA or SAS:

STATA: You can order online at the following link:
http://stata.com/order/new/edu/gradplans/gp-campus.html.   STATA/IC 11 is available in the classroom and labs. It is appropriate for virtually all analyses except for very large datasets with an extremely large number of variables. STATA 11/IC can be ordered at an academic rate of $98.00 for a one-year license and $179 for a perpetual license. Be sure to mention that you are ordering from the GRADPLAN. Purchases can be picked up at the U of A BookStore on the lower level.

Basic manuals are available at the lab locations, and a Stata version 10 set (which is fine for what we'll be doing in this class) will be available in the Epidemiology/Biostatistics library on the 2nd floor of Drachman Hall. Moreover, there is reasonable electronic help with the package, so you won't need the basic manuals unless you are working at home and/or want to continue with the package long-term. If you want to borrow a manual from the library, check it out with Anita Foley.

SAS: SAS can be ordered from the U of A BookStore. The cost is $79 per year. The link with the necessary information is:
http://www.uofabookstores.com/uaz/CATS/License_SAS.asp.

Tips for Succeeding in the Course:

1. Attend class
2. Find a study group
3. Get to know one of the TAs
4. Read the textbook before coming to class
5. Ask questions about the reading in class
6. Do your homework early
7. Check your homework answers against the answer key
8. Turn your homework, Analysis Papers and Final Project in on time
9. Ask questions until you understand the material

Communications: You are responsible for reading emails sent to your UA account from your professor and the announcements that are placed on the course web site. Information about readings, news events, your grades, assignments and other course related topics will be communicated to you with these electronic methods. The official policy can be found at: http://www.registrar.arizona.edu/emailpolicy.htm

Disability Accommodation: If you anticipate issues related to the format or requirements of this course, please meet with me. I would like us to discuss ways to ensure your full participation in the course. If you determine that formal, disability-related accommodations are necessary, it is very important that you be registered with Disability Resources (621-3268; http://drc.arizona.edu/) and notify me of your eligibility for reasonable accommodations. We can then plan how best to coordinate your accommodations. The official policy can be found at: http://catalog.arizona.edu/2009-10/policies/disability.htm

Academic Integrity: All students are expected to do their own work. For homework, feel free to ask each other questions about concepts and procedures. However, when it comes time to write down the homework to turn in, do that on your own. Duplicate homework will be considered a breach of academic integrity. Likewise, for the Analysis Papers, feel free to ask each other questions and discuss ideas, but the actual analysis and report generation needs to be your own work. No communication between students of any sort is allowed during exams or regarding the Final Project.

All UA students are responsible for upholding the University of Arizona Code of Academic Integrity, available through the office of the Dean of Students and online: The official policy found is at: http://catalog.arizona.edu/policies/974/acacode.htm

Classroom Behavior: Students are expected to be respectful of the instructor and other students at all times (including limited talking, no reading newspapers, etc.). Cell phones may be brought to class but should be in the mute or vibrate position. If you must take an emergency call or page during class please leave class quietly to speak with the caller (do not leave and return more than once as this disrupts the rest of the class). Students may use their laptops during class only for course related material.

Students are expected to be familiar with the UA Policy on Disruptive Behavior in an Instructional Setting found at http://web.arizona.edu/~policy/disruptive.pdf
and the Policy on Threatening Behavior by Students found at**:**
http://web.arizona.edu/~policy/threatening.pdf

Grievance Policy: Should a student feel he or she has been treated unfairly, there are a number of resources available. With few exceptions, students should first attempt to resolve difficulties informally by bringing those concerns directly to the person responsible for the action, or with the student's graduate advisor, Assistant Dean for Student and Alumni Affairs, department head, or the immediate supervisor of the person responsible for the action. If the problem cannot be resolved informally, the student may file a formal grievance using the Graduate College Grievance Policy found at:
http://grad.arizona.edu/academics/policies/academic-policies/grievance-policy

Grade Appeal Policy: http://catalog.arizona.edu/2009-10/policies/gradappeal.htm

Syllabus Changes: Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate. The examination dates will not change but the material to be tested may change.

Plagiarism: What counts as plagiarism?
- Copying and pasting information from a web site or another source, and then revising it so that it sounds like your original idea.
- Doing an assignment/essay/take home test with a friend and then handing in separate assignments that contain the same ideas, language, phrases, etc.
- Quoting a passage without quotation marks or citations, so that it looks like your own.
- Paraphrasing a passage without citing it, so that it looks like your own.
- Hiring another person to do your work for you, or purchasing a paper through any of the on- or off-line sources.