INTRODUCTION TO HEALTH SCIENCES STATISTICS (CPH 376)  
Fall 2012

Time:  T & Th 4:00 p.m. – 5:15 p.m.

Location: A114

Instructor: Heidi Brown, Drachman Hall A220, heidibrown@email.arizona.edu

Office Hours: Thursday 1:00-3:00 or by appointment

Teaching Assistants:
Erin Campbell [erin06@email.arizona.edu]
Mallorie Fiero [mfiero@email.arizona.edu]
Muhan Zhou [mhz@email.arizona.edu]

Course Preceptor:
Jackie Lee-Eng [jleeeng@email.arizona.edu]

Help Sessions:
Erin:  206W/9  Tuesday 1:00-2:30
Mallorie  206H  Monday 2:30-4:00
Mallorie  206H  Thursday 8:00-9:30
Muhan:  206W/10  Tuesday 9:00-10:30

Catalog Description: This course introduces biostatistical methods and applications, covering descriptive statistics, probability, and inferential techniques necessary for appropriate analysis and interpretation of data relevant to health sciences. Students will use a statistical software package.

Course Prerequisites: MATH 110; pre-health or health education students. We don’t focus on the math, but there is an assumption that you have basic knowledge (order of operations: http://www.mathgoodies.com/lessons/vol7/order_operations.html, solve for x in an equation, etc.).

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

1. Explain basic statistical terminology and concepts.
2. Determine the proper method to be used in analyzing data sets.
3. Conduct basic statistical tests by hand.
4. Generate and interpret computer output of statistical problems using Microsoft Excel.
5. Review medical/scientific periodicals or journal articles that present statistical inferences.
Undergraduate Competency:
- Use basic biostatistical approaches and other modern methodological frameworks to design and test hypotheses.

Course Notes: Chapter notes and syllabus will be available on http://d2l.arizona.edu. It is listed as CPH 376. Problems we work in class are not always worked out completely in the PowerPoint slides. Please take notes in class.

Course Communication: Students will be expected to check the d2l website on a regular basis. All course communication, including announcements and emails, will be conducted via d2l.

Textbook/Readings: We will be using the 10th edition of *Understandable Statistics*, by Brase and Brase, published by Brooks/Cole Cengage Learning. It is available in the Arizona Health Sciences Bookstore at the Arizona Health Sciences Center. Lecture slides, examples, and homework problems follow the framework of the textbook. It is advisable to pick up a copy as soon as possible. A copy is available on reserve at the School of Public Health Division of Epidemiology and Biostatistics. Edition 9 is similar enough, you can use it.

Course Requirements: Bring your voting card, formula sheet, and calculator to class *every day*. Complete homework on time. Engage in the class. Pass In-class exercises and exams.

**Homework:** Homework will be assigned (pretty much) weekly. It must be turned in during class on the due date. 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.** Please be neat and orderly in your homework assignments. Staple your homework answers and remember to put your name on EACH page.

Homework will be graded and returned as quickly as possible. Homework is returned in class. If you miss the day it is handed out, you can get it from me. Homework in my possession will be thrown out at the beginning of the next semester.

Please pick up your homework. Some homework problems may be discussed in class. The Teaching Assistants will grade your homework. I will check for consistency. It will be your responsibility to check the homework and the TAs’ comments. A **good grade on the homework does not necessarily indicate mastery of the homework.** The TAs hold help sessions to answer your questions. Please take advantage of their help sessions.

Homework that is incomplete will receive the appropriate partial credit. Show all your work to receive full credit. Homework that is not legible will receive no credit. Most homework will be calculations by hand. The use of calculators is allowed for calculation ease, however, you must show all necessary and/or important steps needed to solve each problem. No partial credit can be awarded if you do not show your work. On occasion, I may assign homework problems that ask you to use Microsoft Excel.

**NOTE: LATE HOMEWORK ASSIGNMENTS WILL NOT BE ACCEPTED!**

The homework assignments are all weighted equally. Rather than accept late homework, I drop the **two** lowest homework grades. You may turn in homework early if that is convenient for you.
**In-class Exercises:** These are like participation points and also serve to check how we all are learning. Exercises will be given in-class throughout the semester. **There are no make-ups.** You are either in class or you are not. You are permitted to miss two exercises i.e., the 2 lowest scores will be dropped.

**Exams and Final:** There are 3 exams and a final exam for this course. Exams cover material in class, lectures, readings, homework, and in-class exercises. They are cumulative in the sense that the material builds upon itself.

All will be completed closed book, in class without help from your peers.

Cell phones or any other electronic devices should not be in sight during the exam, with one exception – a calculator. Your cell phone is not a calculator. I do not have extra calculators or batteries. Please be prepared.

**Extra Credit:** There are 3 extra credit assignments. Each is worth 1% added to your final grade. Extra credit is not accepted late. These are challenging assignments, start working on them now. I will only grade these if you are within 3 points of the next letter grade. They are graded on a point scale: full credit, ½ credit, no credit. They are to be conducted independently. The assignments are:

1) Write a 2 page essay on how you would improve STEM education in the United States. Begin the essay by discussing the current state of STEM education in the US and identify what you believe is hindering US excellence. Describe your solution and how you would evaluate the success of your idea. Include a minimum of 5 references. This assignment is due in class on **02 October**.

2) Identify 5 current topics in the news or scientific literature where statistics are being abused. Include the reference (link, description, etc) and a paragraph describing the abuse. Scientific literature can be older, but news has to be since the start of the semester 20 August. This assignment is due in class on **30 October**.

3) Develop and describe an in-class exercise for a specific chapter from our book. Generate the dataset, instructions, solutions, and other relevant materials for an in class exercise. This assignment is due **04 December**.

**Grading/Student Evaluation:** I do not give grades. Students earn grades. I do not curve or round up at the end of the semester. Please take advantage of the extra credit.

Your final grade will be determined as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework</td>
<td>20%</td>
</tr>
<tr>
<td>In-Class Exercises</td>
<td>15%</td>
</tr>
<tr>
<td>Three Midterm Exams</td>
<td>45% (15% each)</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
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<tr>
<td>(Extra Credit)</td>
<td>+3%</td>
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</tbody>
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Final grades are based on the following point system:

- A = 90-100%
- B = 80-89%
- C = 70-79%
- D = 60-69%
- F = 59% or less
**Class Attendance:** Although I do not keep attendance, you are responsible for everything that goes on in class, including the in-class exercises and any alterations to the syllabus. Notes, solutions, hints, fun websites, useful links will be posted on D2L. See comments about In-Class Exercises.

Please come and please ask questions.

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.)

**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](http://www.registrar.arizona.edu/emailpolicy.htm)

**Email Etiquette:** Please be professional with respect to emails you send. Email is not texting. Emails are letters. They begin with a greeting and end with a closing. Please use proper punctuation and remember to use spell check. Please include sufficient information in the email that I can respond appropriately. I respond to email as quickly as I can. If your email query is covered in the syllabus, you will receive an email stating “Please see syllabus.” If your email is not professional, it will be returned for you to revise. If you do not receive a reply to an email, check D2L - especially when your email is likely relevant to the whole class. This may be helpful: [http://www.101emailetiquettetips.com/](http://www.101emailetiquettetips.com/)

**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/](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](http://catalog.arizona.edu/2009-10/policies/disability.htm)

**Academic Integrity:** 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 at [http://deanofstudents.arizona.edu/codeofacademicintegrity](http://deanofstudents.arizona.edu/codeofacademicintegrity).

**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 mode. 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. Online shopping or otherwise surfing the web is disruptive to your classmates.

The Dean of Students has set up expected standards for student behaviors and has defined and identified what is disruptive and threatening behavior. This information is available at: [http://deanofstudents.arizona.edu/disruptiveandthreateningstudentguidelines](http://deanofstudents.arizona.edu/disruptiveandthreateningstudentguidelines).
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](http://web.arizona.edu/~policy/disruptive.pdf) and the Policy on Threatening Behavior by Students found at: [http://web.arizona.edu/~policy/threatening.pdf](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 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, undergraduate students may file a formal grievance with the University’s Dean of Students Office. Graduate Students may file a formal grievance using the Graduate College Grievance Policy found at: [http://grad.arizona.edu/academics/policies/academic-policies/grievance-policy](http://grad.arizona.edu/academics/policies/academic-policies/grievance-policy)

**Grade Appeal Policy:** [http://catalog.arizona.edu/2009-10/policies/gradappeal.htm](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.
**Course Schedule**: Listed below are important dates and book chapters to be covered:

8/21  Syllabus and Introduction  
8/23  Chapter 1: Getting Started  
8/28  Chapter 2: Organizing Data  
8/30  Chapter 2  
9/4   Chapter 3: Averages and Variation  
9/6   Chapter 3  
9/11  **EXAM #1 (Chapters 1-3)**  
9/13  Chapter 4: Elementary Probability Theory  
      **9/16  Last day to drop a class without it showing on your transcript**  
9/18  Chapter 4  
9/20  Chapter 5: The Binomial Probability Distribution and Related Topics  
9/25  Chapter 5  
9/27  Chapter 5  
10/2  Review  
**10/4  EXAM #2 (Chapters 4 & 5)**  
10/9  Chapter 6 Part 1: The Normal Distribution  
10/11 Chapter 6 Part 1  
10/16 Chapter 6 Part 2: Sampling Distributions  
10/18 Chapter 6 Part 2  
10/23 Chapter 7: Estimation  
10/25 Chapter 7  
10/30 Review  
**11/1  EXAM #3 (Chapters 6 & 7)**  
11/6  Chapter 8: Hypothesis Testing  
11/8  Chapter 8  
11/13 Chapter 8  
11/15 Chapter 9: Correlation and Regression  
11/20 Chapter 9  
**11/22 HAPPY TURKEY (or TOFU-RKY) DAY**  
11/27 Chapter 10: Chi-Square and F Distributions  
11/29 Chapter 10  
12/4  Review  
**12/11 Final Exam (Chapters 8-10): 3:30pm – 5:30pm**

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Visit [this link](http://www.em.arizona.edu/datesdeadlines/datesdeadlines.aspx?t=124) for more information.