Mathematics 263, Fall 2014
Introduction to Statistics and Biostatistics

COURSE OBJECTIVE
The goals of this course are to introduce each student to the practice of statistics and to prepare each student for future work in statistics. More specifically each student should be able to understand the data utilized and summarized with statistics in the research literatures of the respective field of study. In addition, they should be able to understand statistics reported in popular media so that they could obtain useful information provided by good data.

Introduction to Statistics and Biostatistics provides an introduction to selected important topics in statistical concepts and reasoning.

Specific topics include tools for describing central tendency and variability in data; methods for performing inference on population means and proportions via sample data; statistical hypothesis testing and its application to group comparisons; issues of sample size in study designs; and random sample and other study types. While there are some formulae and computational elements to the course, the emphasis is on interpretation and concepts.

Upon completion of this course, students are able to:

- Recognize and give examples of different types of data arising in various fields
- Interpret differences in data distributions via visual displays
- Calculate standard normal scores and resulting probabilities
- Calculate and interpret confidence intervals for population means and proportions
- Interpret and explain a p-value
- Perform a two-sample t-test and interpret the results; calculate a 95% confidence interval for the difference in population means
- Select an appropriate test for comparing two populations on a continuous variable
- Understand and interpret results from Analysis of Variance (ANOVA), a technique used to compare means amongst more than two independent populations
- Choose an appropriate method for comparing proportions between two groups; construct a 95% confidence interval for the difference in population proportions
- Describe different kinds of studies
- Use graphing calculator/Excel to
  - Perform statistical testing
  - Create relevant graphs
  - Interpret output related to the various estimation and hypothesis testing procedures covered in the course

INSTRUCTOR
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Course Web Page: math.arizona.edu/~stats
OFFICE HOURS
W / F / F  9:30-10:30AM / 8:30-9:30AM / 11AM-12PM (@ Math East 145)

CLASS MEETINGS
Section 10  T/TH  12:30-1:45PM  PSYCH 306
Section 11  T/TH  2:00-3:15PM  M LNG 312

CLASS ANNOUNCEMENTS
See WebAssign announcements for written HW and Excel Assignment due dates

COURSE MATERIALS
Text - Intro to the Practice of Statistics, 8th Edition, by Moore, McCabe, & Craig is required. WebAssign – Required for Online HW. WebAssign will be used for problems assigned from the text. Free responses will be given 3 attempts. Multiple-choice responses will be given 1 attempt.
Graphing calculator - Each student is required to have, and to know how to use, a graphing calculator that can do the statistical calculations correlation and linear regression. Some examination questions will require the use of such calculators. No calculator swapping will be permitted during exams. In the classroom, the Texas Instruments TI-84 will be used. If you have a different calculator type, YOU ARE RESPONSIBLE FOR LEARNING THE TOOLS NEEDED FOR CLASS.
Software – Excel with the Analysis Toolpak add-in (Mac users with Excel 2011 can follow the directions here: office.microsoft.com/en-us/mac-excel-help/i-can-t-find-the-analysis-toolpak-HA102927742.aspx)

Instructions for Web Assign: To create an account for this class go to http://webassign.net, click on the Log-In button, then click on the I Have a Class Key button. Class key information (PLEASE USE THE CORRECT CLASS KEY to enroll into the CORRECT SECTION).

Class Key
Section 10: arizona 1664 6824
Section 11: arizona 9165 2540

You must do this even if you have used WebAssign in the past or are using it for another course this semester. There is a 14-day grace period (from the first day of classes) before you must purchase/submit your access code for this class. Each time you log-in, you will see a reminder.

PLEASE NOTE WE WILL NOT USE WEBASSIGN EMAILS IN THIS CLASS

ATTENDANCE
Attendance is expected and is obviously in a student's best interest. Students are responsible for all information provided in class and on the course web page. Class roll will be taken periodically. Any student who is excused from class for attendance at an officially authorized event must provide a written excuse signed by the Dean of Students no later than one week after
the absence. Electronic devices such as cell phones, pagers, watch alarms, etc. must be turned off during class.

You are responsible for any information given in class, posted in WebAssign, or sent by email from your instructor. Notify the instructor in advance if you must miss class, arrive late to class, or leave early from class. Primary communication from your instructor will be through university email. Check your email frequently. You are expected to behave in accordance with the UA’s Code of Academic Integrity and Student Code of Conduct at http://deanofstudents.arizona.edu/policiesandcodes.

EXAMINATIONS. Three midterm examinations. Tentative dates below.
Exam 1 – September 16th
Exam 2 – October 9th
Exam 3 – November 20th

The final examination (The final exam will be in the regular classroom)
Section 10 – Thursday, December 18 (10:30AM – 12:30PM)
Section 11 – Wednesday, December 17 (3:30PM – 5:30PM)

Exam 1,2,3 - you may bring a 3X5 notecard (can use BOTH sides/but handwritten notes ONLY)
Final Exam - you may bring a 5X8 notecard (can use BOTH sides/but handwritten notes ONLY)

Unless there are extenuating circumstances, a missed midterm examination or a missed final examination will result in a score of zero for that work. Makeup tests are given only at the discretion of the instructor.

If a student earns a higher percentage on the final examination than on one of the midterms, then the student's lowest midterm score will be replaced by the percent scored on the final examination (Note: You will have to take the midterm exams and earn a score to qualify for this policy).

HOMEWORKS/QUIZZES
• 3 types of homework - WebAssign, Written HW from text, and Excel Assignments
• Excel assignments
  o Have to be computer generated documents
  o You need to have relevant graphs/tables/data from excel included on your document
  o If you have a large data set, a sample of the first 10 rows should be provided
• Your 3 lowest homework scores will not be counted in your final homework grade
• Homework will be assigned regularly
• Select homework will be graded and returned at a regular basis
• Late homework will not be accepted. Makeup quizzes not permitted (The only exception would be an official UA Deans excuse)
• Homework will be due at the beginning of the class
• Your name, Section Number and the Instructor’s name should be PRINTED on the first page of homework
• Multiple pages should be stapled together
• Answers to each problem should be neatly written, with all intermediate steps included and the problem number clearly marked. Written explanations should be included whenever appropriate. Include units on answers. Graphs should be labeled, with the window clearly marked. **You need to show all work to earn full credit**

• You will not be given credit for problems that are not legible.
• No extra credit is permitted.
• Pop quizzes may be announced or unannounced, and no make-up quizzes will be given.
• Most homework questions are to be handled during instructor office hours and in the tutoring room. When time permits, I will discuss solutions to homework problems or similar problems. Class time is devoted to the explanation of the current topic and to the solution of problems involved with this topic.
• If you are unable to make it to class, submit HW in advance or during the class period its due in MATH108. They have a logbook to submit HW’s
• **EMAIL SUBMISSIONS WILL NOT BE ACCEPTED**
• If you are dissatisfied with a grade you are welcome to discuss it with me during office hours, but you must make an appointment and discuss the grade within 7 academic days of receiving the relevant exam/HW/quiz back from me.
• Students must be punctual and NO TALKING DURING THE LECTURE.
• **BE SURE TO READ THE RELEVANT LESSON and PREPARE ACCORDINGLY FOR EACH CLASS**

**COURSE GRADES**
Midterm examinations will be worth 100 points each, and the final examination will be worth 200 points. Excel assignments and written homework/quizzes will be worth 100 points, Online Web Assign assignments will be worth 100 points. At the end of the Semester, grades will be assigned based on the following scale:

<table>
<thead>
<tr>
<th>Total Points</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>630-700</td>
<td>A</td>
</tr>
<tr>
<td>560-629</td>
<td>B</td>
</tr>
<tr>
<td>490-559</td>
<td>C</td>
</tr>
<tr>
<td>420-489</td>
<td>D</td>
</tr>
<tr>
<td>0-419</td>
<td>E</td>
</tr>
</tbody>
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All electronic devices, particularly cell phones, must be turned off during all exams. Silence and vibration modes are not allowed. The University's Exam regulations for final exam week will be strictly followed, in particular those regarding students with multiple exams on a single day. Now is the time to find out if you have a problem with multiple exams on a single day.

**DROPPING THE COURSE**
September 8- Last day to drop without a W
November 2- Last day to withdraw online through UAccess

**INCOMPLETE GRADES**
If a student fails to complete the course due to circumstances unforeseen, then he or she may qualify for a grade of I, "incomplete" if one of the conditions are met:
1. The student has completed all but a small portion of the required work.
2. The student has scored at least 50% on all work completed.
3. The student has a valid reason for not completing the course on time.
4. The student agrees to make up the material in a short period of time.
5. The student asks for the incomplete before grades are due - 48 hours after the final exam.

UNIVERSITY POLICIES
Students are expected to be familiar with and abide by the University of Arizona's Code of Academic Integrity, Student Code of Conduct, and Official Student Email Policy. These policies will be strictly enforced, and any student found to be in violation will be appropriately sanctioned.

STUDENTS WITH DISABILITIES
If you anticipate issues related to the format or requirements of this course, please meet with your instructor 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; drc.arizona.edu). You should notify me of your eligibility for accommodations as soon as possible. You and I can then plan how to coordinate your accommodations.