Key information

Instructor. Name:  
Office:  
Phone:  
E-mail:  
Home Page:  
Course Web Page: math.arizona.edu/~stats

Class Meetings.

Office Hours-

or By appointments

❖ Class announcements and due dates-Must be posted on Webassign or D2L in a timely manner

Class key for webAssign-

Examinations. Three midterm examinations. (Tentative dates)

Exam 1-  
Exam 2-  
Exam 3-

The final examination (The final exam will be in the regular classroom as scheduled by the University)

Final exam date

Overview.

Statistics is the field of study involving (1) the collection, summarization, and analysis of data; and (2) the drawing of inferences about a population from the examination of a sample of the population.

Biostatistics is the application of statistics to biological and medical questions. Biostatistics uses much the same core sets of concepts and principles as does applied statistics in general. The substance-matter knowledge that the biostatistician must learn in order to be successful is
biomedical. Biostatistics underlies the process of medical research, playing a key role in each step of scientific inquiry from the research bench to the hospital bedside to the community. Biostatistics is concerned with the development and proper application of methods for study design, data measurement, data generation, and data analysis, these latter methods being used to help understand biomedical data by quantifying variation and/or separating signal from noise. An intellectually stimulating feature of biostatistics is that its fundamental elements of data and variation are ubiquitous, being found in the areas of cell regulation, gene expression, genetic susceptibility, pharmacokinetics, response to therapy, assessment of medical treatments and new technology, adherence to guidelines, and program evaluation.

**Importance of learning Biostatistics**

Biostatisticians are in great demand in academia, industry, and government. The responsibilities of biostatisticians span the entire scientific process. They assist in the design and interpretation of studies, and usually have primary responsibility for implementing protocols for data management, data analysis, and quality assurance. More generally, the increasingly complex, interdisciplinary, and data-intensive nature of medical research has caused, and will continue to cause, the demand for persons trained in biostatistics to increase. The supply of biostatisticians is currently inadequate, and is not rising quickly enough to keep pace with demand. The imbalance between supply and demand is particularly acute for outstanding biostatisticians that combine excellent quantitative training with the communication skills necessary to succeed in the medical environment.

**Objectives of this course**

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 the 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

1. [http://biostat.duke.edu/master-biostatistics-program/frequently-asked-questions#What_is_biostatistics_](http://biostat.duke.edu/master-biostatistics-program/frequently-asked-questions#What_is_biostatistics_)
- 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

Course prerequisites

Appropriate Math Placement Level or Proctored/Prep for
College Algebra 88+ or Proctored/Prep for Calculus 65+ or
MATH 109C, 110, 112, 113, 116, 120R, 122B, 124, 125 or
129 (Transfer credit for MATH 124, 125,129 okay).

Web Assign. Required for Online HW

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.

You must do this even if you have used Web Assign 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.

COURSE MATERIALS

- Text - Intro to the Practice of Statistics, 8th edition by Moore, McCabe, & Craig.
- WebAssign -Online HW’s
- Graphing calculator
- Software - Excel with the Analysis ToolPak add-in.
Calculators. 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 TO SELF LEARN THE TOOLS NEEDED FOR THE CLASS.

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. In addition, students with more than 3 unexcused absences may be administratively dropped from the course. (See Administrative Drop Policy at http://catalog.arizona.edu/2015-16/policies/classatten.htm) If you need to miss class for unavoidable circumstances, see your instructor as soon as possible. Other actions that may result in an administrative drop from this course include failing to sign up for webassign or missing more than 5 assignments.

All holidays or special events observed by organized religions will be honored for those students, who show affiliation with that particular religion,

Examinations. Three midterm examinations. The final examination (The final exam will be in the regular classroom as scheduled by the University)

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).

Homework/Quizzes: refer to your instructor’s HW/Quiz policy
**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>
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<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>
</table>

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 7th - Last day to drop without a W

October 27th - 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 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.
Other information
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1. **Excel assignments due at the beginning of class period**
   - They have to be computer generated documents
   - You need to have relevant graphs/tables/data from excel included on your document
   - **ALL EXCEL ASSIGNMENTS YOU NEED TO DO VERSION 2 (available in the course webpage. www.math.arizona.edu/~stats)**
   - **Due in class. The printed copy with all supporting work.**

2. **EXAM 1, 2, 3** / Please note you may bring a 3X5 note card (can use BOTH sides/but hand-written notes ONLY)

3. **FINAL EXAM** / Please note you may bring a 5X8 note card (can use BOTH sides/but hand-written notes ONLY)

4. **Webassign**
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Due dates will follow the pacing of the material in the course. Free responses will be given 3 attempts. Multiple choice responses will be given one attempt. You could skip the essay parts for questions.

5. The information contained in the course policy (other than the grade and absence policies) may be subject to change with reasonable advance notice, as deemed appropriate by me

6. **Policies regarding expected classroom behavior**

   All cell phones, mobile devices and electronic devices needs to be switched off during the lecture.

7. **Policies against plagiarism, etc., within Student Code of Academic Integrity:**

   All students must abide by the rules set by the UA deans of students (see http://deanofstudents.arizona.edu/policies)

8. **Policies against threatening behavior by students:**

   All students must abide by the rules set by the UA.

   (see http://policy.web.arizona.edu/threatening-behavior-students)
9. Policies against discrimination and harassment, along with offices for reporting concerns related to discrimination or harassment.

All students must abide by the rules set by the UA.

(see http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy)

10. Students who register after the first class meeting, they need to talk to the instructor or email the instructor within 48 hours of enrollment to request for extensions for missed assignments/quizzes.

11. Acceptable time period for disputing a grade on a paper, project, or Exam is within 7 academic days after you receive a grade;