

SDS 332
Statistical Models for the Health and Behavioral Sciences
Department of Statistics & Data Sciences
Unique #57475, Spring 2017

Basic Course Information:

Instructor: Jerry Manheimer, Ph.D.
Office: GEA 1.29
Office hours: WF, 9:45-10:45, or by appt.
Phone: 512-750-6226
E-mail: jmanheim@utexas.edu

Teaching Asst.: Youngwon Kim
Office: SZB 536-537 Common Area
Office hours: MW: 1:00-2:00, or by appt.
E-mail: youngwonkim@utexas.edu

Class Meetings: MWF 11-12
Class Location: UTC 4.134

Description: This course introduces students to statistical models that are commonly used to analyze data collected in health care and behavioral research. The course covers the logic and mechanics of testing statistical hypotheses with these models, and the inferences that can be drawn from the results. One goal of this course is for students to develop a sufficient foundation from which they can begin to conduct their own analyses and critically evaluate the statistical analyses of others. Another goal is for students to acquire experience using statistical analysis software to conduct data analyses.

Prerequisite: Statistics and Data Sciences 302 (or Statistics and Scientific Computation 302), 304 (or Statistics and Scientific Computation 304), 306 (or Statistics and Scientific Computation 306), 328M (or Statistics and Scientific Computation 328M), or the equivalent.

Course Materials and Tools:

Required Textbook:

Kuiper, S. and Sklar, J. (2013). *Practicing Statistics: Guided Investigations for a Second Course*. Publisher: Pearson

The textbook is available at the University Coop on Guadalupe

Canvas: Announcements, course handouts, lecture notes, assignment instructions, and grades will be posted on Canvas. If you have a question about the course, please check Canvas and the syllabus before emailing the instructor or the TA. Please check Canvas periodically for updates.

SAS: Students can use either the SAS University Edition or the SAS OnDemand for Academics software to conduct the data analyses that are required for class assignments. The SAS University Edition software has been installed on a computer located in the basement computer lab in Gearing Hall. However, students have the option of installing the SAS software on their own personal computers. Different options for installing SAS on a personal computer will be discussed in class.

Students who wish to install the SAS software on their personal computer should make sure that they read the installation instructions carefully and follow all of the required steps. Students who are unable to successfully install the software will have to use the SAS software that has been installed in Gearing Hall.

The basics of writing a SAS program will be covered in class. Students should read the first two chapters of Getting Started with Programming in SAS® Studio 3.1 which can be accessed at: <http://support.sas.com/documentation/cdl/en/webeditorgs/67103/PDF/default/webeditorgs.pdf>

Classroom Policies:

Attendance: Students are expected to attend class and to participate in class exercises and discussions. Attendance will be checked periodically with i>Clickers during the course of the semester.

What to Bring to Class: Students should bring their calculator and i>Clicker to class.

Email Policy:

Students can email the instructor or T.A. directly using the email addresses listed in the syllabus. Students should follow the following guidelines when sending email to the instructor or T.A.:

- a. Identify the course, i.e., SDS 332, in the email subject line.
- b. Do not include any attachments in the message.
- c. Students should allow 24 hours for a response during normal work hours (9am –

5pm) Monday through Friday. Students should allow more than 24 hours for a response to an email sent over the weekend.

- d. Use proper spelling, grammar, and punctuation.
- e. Students should avoid using email to ask questions that can be raised either in class or, alternatively, in individual meetings with the instructor or T.A. In addition, students should not send questions that require an unreasonable amount of time to answer, such as “Explain ANOVA to me.”

Assignments:

There will be seven assignments requiring students to analyze data with SAS and answer a series of analytical questions. A hard copy of each assignment shall be turned in at the beginning of class on the assignment due date. Instructions for each assignment will be uploaded to Canvas at least eight days prior to the assignment due date.

Policy on Assignments: Assignments must be turned or submitted at the beginning of class on the specified due date. Two points will be deducted from the assignment grade on submissions made after class but before 5 P.M., on the assignment due date. Note that for each day that an assignment is late beyond the due date, five points will be deducted from the assignment grade. Weekend days will be counted in calculating the penalty. Late assignments that are turned in two or more weeks after the due date will not be accepted.

In carrying out assignments, students are required to conform to the high standards of academic integrity as outlined in the Student Judicial Services' web pages. Plagiarism is a form of academic dishonesty which will not be tolerated in this course. In determining whether a student has committed plagiarism, the instructor and T.A. will apply the university's definition of plagiarism, which is described at: http://deanofstudents.utexas.edu/sjs/scholdis_plagiarism.php. Students are responsible for reviewing this definition and ensuring that their papers do not contain instances of plagiarism.

The penalty for the first occurrence of plagiarism will be a grade of zero points on the plagiarized assignment. Students who plagiarize a second time will be given a failing grade in the course.

Quizzes and Exams:

Quizzes: Six quizzes will be given on material covered in class and in the assigned readings over the course of the semester. Each quiz will be given on the date specified in the syllabus at the start of class. Some quiz questions may require students to carry out calculations. Students will be given approximately 20 minutes to complete each quiz. The lowest quiz score will not be included when the points for the course are totaled.

In-Class Exams: There will be three in-class exams that consist of multiple-choice questions. Some of the questions will require calculations.

Policy on Quizzes and Exams: Quizzes and exams must be taken on the scheduled dates listed in the syllabus. Students who show up late will not receive additional time. Because quizzes and exams require that students perform calculations, it is essential that students remember to bring their calculators to class.

Make-up Policy:

Students will be allowed to make up a missed quiz or exam on a different date only if one of the following conflicts occurs on the scheduled date and time for the exam or quiz:

1. Religious holy day observance
2. Intercollegiate athletic event participation
3. Mandatory court appearance

A student who misses an exam a quiz for one of the reasons above must contact the instructor no later than one week before the scheduled date of the exam or quiz. A make-up will be given only if documentation that verifies the absence is provided to the instructor. The make-up exam or quiz will be administered only after the date of the exam or quiz that is specified in the syllabus course schedule.

In the case of a student missing an exam as a result of some other situation, such as funeral attendance, the student's average grade on their five highest quiz scores will replace the missing exam grade. For example, if a student earns 96 points on their five best quizzes, their quiz percent would equal 80% ($96/120$). The student would be assigned an 80 as their score on the missed exam - $80 = 80\% * 100$. This procedure will be applied only if valid documentation is provided by the student that substantiates their absence on the exam date.

Because the lowest quiz score is dropped, the above procedure will not be offered as a way to receive points on a missed quiz. Students should also note that attending weddings or family reunions, and travel for leisure are not considered valid reasons for missing either an exam or quiz.

Grading:

Point Allocation:

Component	Points
Quizzes (5 @ 24 pts each) ¹	120
Assignments (7 @ 30 points)	210
In-Class Exams (3 @ 100 pts each)	300
Total Possible Points	630

¹Six quizzes will be given; the lowest one will be dropped

Course Grade Determination:

Grade	Point Cutoff
A	586
A-	567
B+	548
B	523
B-	504
C+	485
C	460
C-	441
D+	422
D	397
D-	378
F	< 378

Regrade Policy:

If you think there may be an error in the grading of one of your quizzes, exams or assignments, you should bring it the attention of the instructor or T.A. Regrades will only be considered if you contact the instructor or the TA within ONE WEEK after the quiz, exam or assignment has been returned to you in class or is available to be picked up.

Extra Credit:**i>Clicker Quizzes:**

Students can earn up to 30 extra credit points by taking i>Clicker quizzes that will be given several times during the semester. Students can earn from 3-6 extra credit points on each quiz depending upon how many questions they answer correctly. For each quiz, students will use their i>Clickers to answer questions that will be presented during the last 10 minutes of class. The questions will be designed to assess students' understanding of material presented in the lecture that day.

The course schedule shows the class meetings when the I>Clicker quizzes will be given. The first i>Clicker quiz will be given on Jan. 30. Thus, students must register their i>Clickers on Canvas prior to that date. Students who miss an i>Clicker quiz will not be given an opportunity to make up the missed quiz.

Course Schedule

Week	Date	Lesson/Exam	Readings	Quizzes/Exercises/ Assignments Due
1	Jan. 18	Course Introduction, Basic Concepts		
	Jan. 20	Statistics Review I		
2	Jan. 23	Statistics Review II		
	Jan. 25	SAS Overview	Intro to SAS Studio ¹ Ch 1-2	
	Jan. 27	SAS Overview		
3	Jan. 30	t-tests	Text: 2.1-2.2	ICQ 1
	Feb. 1	Basic ANOVA I	Text: 2.4-2.8	Quiz #1
	Feb. 3	Basic ANOVA II		Assignment #1
4	Feb. 6	Basic ANOVA III		
	Feb. 8	Factorial ANOVA I	Text:4.1-4.8	ICQ 2
	Feb. 10	Factorial ANOVA II		
5	Feb. 13	Factorial ANOVA III		Assignment #2
	Feb. 15	Split-Plot and Repeated Measures I	Text:5.1-5.9	
	Feb. 17	Split-Plot and Repeated Measures II		Quiz #2
6	Feb. 20	Split-Plot and Repeated Measures III		
	Feb. 22	Split-Plot and Repeated Measures IV		ICQ 3
	Feb. 24	Exam 1 Review		Assignment #3
7	Feb. 27	Exam 1		
	Mar. 1	Simple Linear Regression I	Text:2.3	
	Mar. 3	Simple Linear Regression II		ICQ 4
8	Mar. 6	Simple Linear Regression II		
	Mar. 8	Analysis of Covariance I	Text:5.12	Quiz #3
	Mar. 10	Analysis of Covariance II		Assignment #4
9	Mar. 13-17	Spring Break		
10	Mar. 20	Analysis of Covariance III		
	Mar. 22	Multiple Regression I	Text:3.1-3.6	ICQ 5
	Mar. 24	Multiple Regression II		Quiz #4
11	Mar. 27	Multiple Regression III	Text:3.7-3.11	
	Mar. 29	Multiple Regression IV		ICQ 6
	Mar. 31	Exam 2 Review		Assignment #5
12	Apr. 3	Exam 2		
	Apr. 5	Categorical Data Analysis I	Text:6.1-6.3	ICQ 7
	Apr. 7	Categorical Data Analysis II	Text:6.5-6.11	

Week	Date	Lesson/Exam	Readings	Quizzes/Exercises/ Assignments Due
13	Apr. 10	Categorical Data Analysis III		
	Apr. 12	Logistic Regression I	Text:7.1-7.16	Quiz #5
	Apr. 14	Logistic Regression II		
14	Apr. 17	Logistic Regression III		Assignment #6
	Apr. 19	Survival Analysis I	Text:9.1-9.8	Quiz #6
	Apr. 21	Survival Analysis II		ICQ 8
15	Apr. 24	Survival Analysis III		
	Apr. 26	Principal Components I	Text:10.1-10.9	
	Apr. 28	Principal Components II		Assignment #7
16	May 1	Principal Components III		ICQ 9
	May 3	Exam 3 Review		
	May 5	Exam 3		

ICQ – i>Clicker Quiz for Extra Credit

¹ - <http://support.sas.com/documentation/cdl/en/webeditorgs/67103/PDF/default/webeditorgs.pdf>