

Course Syllabus
15:291:532
Statistical Methods in Education II
Spring 2013

Instructor: Youngsuk Suh

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Office hours: Tuesday 2:30 - 3:30 PM, or by appointment

Time: Monday, 4:50 – 7:30 PM

Place: Room 347, Graduate School of Education

Prerequisite: Statistical Methods in Education I (15:291:531 or 16:960:531)

Text: Moore, D. S., McCabe, G. P., & Craig, B. (2012). *Introduction to the practice of statistics (7th ed)*. New York: W. H. Freeman.

Software: *SPSS for Windows (Version 18 or 19)*. New York: Prentice-Hall.

Course Description

This course is the second part of a one-year sequence in statistical methods designed to introduce students to the most commonly used methods in educational and social science research. This course assumes that students have taken the first part of the sequence or have equivalent knowledge through one-sample z-test. Topics covered in this course include one- and two-sample t-test, chi-square test, regression analysis, and one- and two-way analysis of variance (ANOVA).

Calculator: Students are required to bring to class a scientific calculator that can be used to sum, multiply, take the square root and square of numbers.

Course Goals

Upon successful completion of this course, you will be able to complete the following tasks:

1. Understand the probability theory, the foundation of statistical methods.
2. Understand the distributions of random variables as well as their properties.
3. Have a basic understanding of correlation and linear regression.
4. Carry out the statistical analysis using both hand calculation and computer software (SPSS).
5. Test research hypotheses by applying probability theory.
6. Explain the differences among various statistical techniques and identify an appropriate technique for a given set of variables and research questions.
7. Make a decision based on the statistical results and interpret the results.

Course Requirements

- 1. Exams:** The two in-class exams, midterm and final, are worth 30% and 30% of the final grade, respectively. The exams may consist of multiple choice items, true/false items, computations, and short answer questions. Exams are held during class time and can only be re-scheduled for individual students under exceptional circumstances (see Makeup assignments for details).
- 2. Homework assignments:** Approximately 10 homework assignments (worth 40% of the final grade) will be given throughout the semester. Some problems requiring SPSS analyses will be given. Homework assignments are due at the beginning of the class the week after they are assigned. No late homework assignments will be accepted.
- 3. Participation:** Your participation is expected throughout the semester.
- 4. Software & Calculator:** SPSS for Windows will be used extensively to conduct statistical analyses for homework assignments and class exercises. However, for the exams, a calculator that performs basic operations will suffice.

Grading System

Final letter grade will be assigned as follows:

Final Score	Letter Grade
90% and Above	A
80%-89.99%	B+
75%-79.99%	B
65%-74.99%	C+
60%-64.99%	C
55%-59.99%	D
Below 55%	F

Makeup Assignments

Only in exceptional circumstances and only with prior permission from the instructor, or with a verifiable medical excuse, will students be able to take a makeup exam. The student must provide medical proof of illness. The student is responsible for notifying the instructor by the day of the exam that they cannot attend the exam. The format of make-up test is at the discretion of the instructor.

If a student becomes ill (supported with a doctor's note) on the day that a homework assignment is due and the assignment is not complete, then the student will receive credit only for what was attempted. It is the student's responsibility to notify the instructor before class starts that they cannot attend class. It is also their responsibility to ensure that the work is handed in that day (by the start of class) or that an alternative time is arranged with the instructor.

Communication

In this course e-mail will be used as a means of communication with students. You will be responsible for checking your e-mail regularly for class work, deadlines, changes and announcements.

Class handouts used by the instructor will be available on Sakai website at <http://sakai.rutgers.edu> under *15:291:532:01 S13 Stat II*. They will be made available by 8AM each class day. It is your responsibility to print them out if you want to have hard copies in class.

The handouts provide a skeleton of what is being covered each day and will thus be an incomplete version of the material actually covered.

Policy on Academic Integrity

Please refer to the Policy on Academic Integrity for Undergraduate and Graduate Students at <http://academicintegrity.rutgers.edu>. I will follow the policy strictly.

Tentative Class Schedule

The following class schedule is subject to change if necessary.

Date	Topic	Assigned Readings
1. Jan. 28	Introduction to Hypothesis Testing	6.2 - 6.4
2. Feb. 4	One Sample t Test and Matched Pairs t Test	7.1
3. Feb. 11	Two Sample t Test	7.2
4. Feb. 18	Tests for Variances, One Sample Proportion Test	7.3, 8.1
5. Feb. 25	Two Sample Proportion Test, Analysis of Two-Way Tables	8.2, 9.1
6. Mar. 4	Chi-Square Test for Two-Way Tables	9.2
	Goodness of Fit	9.3
7. Mar. 11	Review	
8. Mar. 18	Spring break	
9. Mar. 25	MIDTERM EXAM (Covers Sections 7.1 – 9.3)	
10. Apr. 1	Simple Linear Regression	10.1, 10.2
11. Apr. 8	Multiple Regression	11.1, 11.2
12. Apr. 15	One-Way ANOVA	12.1
13. Apr. 22	Contrasts and Multiple Comparisons	12.2
14. Apr. 29	Two-Way ANOVA I	13.1
15. May. 6	Two-Way ANOVA II	13.2
	Review	
16. May. 13	FINAL EXAM (Covers Section 10.1 - 13.2)	

** Reading assignments must be completed prior to each lecture.

** SPSS analysis will be discussed after each topic is covered.

** **Religious holy days** sometimes conflict with class and examination schedules. You must notify your instructor of the issues prior to the classes scheduled on dates you will be absent to observe a religious holy day. If you have to miss an exam due to a religious holy day, it is your responsibility to re-schedule with the professor another time to take the exam.