Course Syllabus
15:291:531:90
Statistical Methods in Education I
Fall, 2013

Instructor: Youngsuk Suh

Office: Room 323, Graduate School of Education

Email: youngsuk.suh@gse.rutgers.edu

Lecture Time: New lecture materials will be posted on Wednesdays, starting from September 4.

Online Session: Thursday noon

Discussion: Every weekday

Text: Moore, D. S., & McCabe, G. P. (2012). Introduction to the practice of statistics

(7th edition). New York: W. H. Freeman.

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

Course Description

This course is the first 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. No prior knowledge of statistics is required, but essentials of arithmetic and basic algebra will be used throughout the semester. Topics covered in this course include graphical representations, descriptive statistics, correlation, regression, experimental designs, basic probability, sampling distributions, confidence intervals, and hypothesis testing.

Course Goals

Upon successful completion of this course, you will be able to complete the following tasks:
1. Be able to use and interpret graphical representations.
2. Understand the basic probability theory, the foundation of statistical methods.
3. Understand the normal distributions of random variables as well as their properties.
4. Have a basic understanding of estimating correlation and linear regression.
5. Carry out the basic statistical analysis using calculator and/or computer software (SPSS).
6. Conduct research hypothesis tests and construct confidence intervals.
7. Make a decision based on the statistical test results and interpret the results.

Course Requirements

1. Email & eCollege Access: Efficient communication is the key to evaluate how successful an online course is and in this course, **emailing** and **eCollege** are the two communication tools that we heavily rely on. To maximize the teaching and learning effects, you have to check your email account frequently and make sure you are able to read information, download files, drop messages, do homework, and access your grades from our webpage. All information and

activities are time sensitive. Late responses and requests will not be handled. For example, we may need to vote to make a decision and late votes will not be taken. Another example is that you will have a run of time to finish each homework assignment. However, you will not be able to access the homework questions after designated time.

2. Exams: The two exams, midterm and final, are worth 30% and 30% of the final grade, respectively. The exams will be created to measure the course goals listed above.

3. Homework assignments: Approximately 10 homework assignments, worth 40% of the final grade, will be given online throughout the semester. Homework assignments will be created to assess the course goals. Homework assignments will be assigned on **Thursday** and will be <u>due on the following</u> **Wednesday.** So basically you have a whole week to work on a homework assignment. No late homework assignments will be accepted.

4. Participation: Your participation is expected during the semester.

5. Calculator: A calculator that performs basic operations (e.g., arithmetic and square-root operations) is necessary for homework assignments and exams.

<u>Online Sessions</u>
Online sessions in this course are analogous to office hours in a regular course. Online sessions are not held for getting through the notes, but for demonstrating how to solve more challenging problems in the notes or extra problems. Recorded live sessions will be uploaded on every Thursday (at noon).

<u>Discussion Sessions</u>
In addition to the online sessions, an alternative to find the solution of your question is to simply post your questions online. This is especially convenient for those of you who cannot participate in our online sessions. A Basket labeled Question Box will be created every week for you to drop content-related questions. Your questions will be replied every weekday. Therefore, please make sure you are familiar with the Dropbox function.

<u>Final Grade</u>
Final letter grade will be assigned as follows:

Final Score	Letter Grade
90% and Above	A
80%-89%	B+
75%-79%	B
65%-74%	C+
60%-64%	C
Below 60%	F

Class Schedule

Reading assignments must be completed prior to each lecture.

Date	Topic	Assigned Readings
Week1: Sep 4	Displaying Distributions with Graphs	1.1
Week2: Sep 11	Displaying Distributions with Numbers SPSS 18 for Window	1.2
Week3: Sep 18	Normal Distribution Theory, SPSS	1.3
Week4: Sep 25	Scatter Plots and Correlation	2.1, 2.2
Week5: Oct 2	Regression Analysis	2.3
Week6: Oct 9	Cautions About Regression and Correlation, SPSS	2.4
Week7: Oct 16	Designs of Experiment and Statistical Inference	3.1, 3.3
Week8: **Oct 23**	**MIDTERM EXAM (Sections 1.1 – 3.3)**	
Week9: Oct 30	Randomness and Probability Models	4.1, 4.2
Week10: Nov 6	Random Variables and Moments	4.3, 4.4
Week11: Nov 13	Sampling Distributions of Means	5.1, 5.2
Week12: Nov 20	Confidence Interval	6.1
Week13: Nov 27	**Thanksgiving Holiday**	
Week14: Dec 4	Hypothesis Testing	6.2
Week15: Dec 11	Use and Abuse of Tests	6.3
Week16: **Dec 18**	**FINAL EXAM (Section 4.1 – Section 6.3)**	

Policy on Academic Integrity

Please refer to the Policy on Academic Integrity for Undergraduate and Graduate Students at http://academicintegrity.rutgers.edu. Clear evidence of violation of academic integrity policy may result in a grade of F for the course.