

## **Quantitative Research Methods in Education I: Introduction**

**16:300:511**

**Fall, 2013**

### **Course Information**

Instructor:	Dr. Chia-Yi Chiu
	Office: Room 326, Graduate School of Education
	Email: chia-yi.chiu@gse.rutgers.edu
	Office Hour: By appointment
Time:	4:50PM – 7:30PM, Wednesdays
Classroom:	Room 208, GSE
Text:	Hinkle, D., Wiersma, W., & Jurs, S. (2003). Applied Statistics for the Behavioral Sciences. Wadsworth.
Software:	SPSS for Windows (Version 19). New York: Prentice-Hall.

### **Course Description**

This course is designed to develop skills and understanding of statistical methods for problems in educational and social science research; topics include descriptive statistics, probability theory and distributions, point and interval estimation, and hypothesis testing, regression analysis, and one- and two-way analysis of variance (ANOVA). A gentle introduction to SPSS will be given along the semester.

### **Course Objectives**

After successfully completing this class students should

1. be able to summarize data using dynamic plots, graphs, and various descriptive statistics.
2. understand and use probability theories to interpret data.
3. understand and apply the properties of the normal distribution to analyze real data.
4. be able to establish hypothesis testing to answer statistical questions.
5. be able to using regression analysis to predict outcomes.
6. master SPSS with different topics.
7. be able to read, interpret, and critically evaluate basic statistical methodology, reported outcomes and subsequent interpretations, as found in educational and behavioral research journals.

### **Course Requirements**

1. eCollege Access: The lecture notes will be posted on our course page supported by eCollege prior to every lecture. You have to download, print the notes and handouts, and bring them to the class. Also, the homework assignments are web-based. Please make

sure you are able to access eCollege at [onlinelearning.rutgers.edu/ecollege](http://onlinelearning.rutgers.edu/ecollege) and familiarize with the functions required to access the handouts and complete the homework assignments.

2. **Exams:** The two exams, midterm and final, are worth 30% and 30% of the final grade, respectively.
3. **Homework assignments:** Approximately 6 or 7 homework assignments, worth 40% of the final grade, will be given online throughout the semester. Homework assignments will be assigned on Thursdays and are due on the Wednesdays the week after they are assigned. So basically you have almost a whole week to work on each homework assignment. No late homework assignment is accepted.
4. **Participation:** Your participation is expected throughout the semester. Please bring any necessary planned absences to my attention ahead of time. Also, questions during the office hours are strongly encouraged.
5. **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.
6. **CELL PHONES AND SIMILAR DEVICES MUST BE TURNED OFF AND MUST STAY STOWED AT ALL TIMES DURING CLASS. LAPTOPS MAY BE USED ONLY FOR NOTE TAKING.**

### **Final Grade**

Final letter grade will be assigned as follows:

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

### **Tentative Schedule**

<b>Date</b>	<b>Course Content and Reading</b>	<b>Assignments</b>
09/04	Ch1: Introduction Ch2: Organizing and Graphing Data	
09/11	Ch3: Describing Distributions: Individual Scores, Central Tendency, and Variation Ch4: The Normal Distribution	Assignment I

09/18	Ch5: Correlation: A Measure of Relationship	
09/25	Ch6: Linear Regression: Prediction Ch7: Sampling, Probability, and Sampling Distributions	Assignment II
10/02	Ch8: Hypothesis Testing: One-Sample Case for the Mean Ch9: Estimation: One-Sample Case for the Mean Ch10: Hypothesis Testing: One-Sample Case for Other Statistics	
10/09	Ch11: Hypothesis Testing: Two-Sample Case for the Mean Ch12: Hypothesis Testing: Two-Sample Case for Other Statistics Ch13: Determining Power and Sample Size	Assignment III
10/16	Review	
10/23	<b><u>Midterm</u></b>	
10/30	Ch14: One-Way Analysis of Variance Ch15: Multiple-Comparison Procedures	Assignment IV
11/06	Ch16: Two-Way Analysis of Variance	
11/13	Ch16: ANOVA (Cont.)	Assignment V
11/20	Ch17: Linear Regression: Estimation and Hypothesis Testing	
11/27	Ch18: Multiple Linear Regression	Assignment VI
12/04	Review	
12/11	<b><u>Final Exam</u></b>	

**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.