

Quantitative Research Methods in Education I: Introduction
16:300:511:01
3 Credits

Instructor: Chia-Yi Chiu	Day & Time: Wednesday, 4:50 PM - 7:30 PM
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Mode of Instruction:	
<input checked="" type="checkbox"/> Lecture	<input type="checkbox"/> Hybrid
<input type="checkbox"/> Seminar	<input type="checkbox"/> Online

Learning goals

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.

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 catalogue description

Introduction to quantitative research techniques, examining their potential and limitations for investigating educational questions and issues. Topics include one- and two-sample tests of hypotheses, analysis of variance, multiple comparison procedures, regression, and effect size.

Class materials/ Textbooks:

Text: Moore, D. S., McCabe, G. P., Craig, B. A. (2014). *Introduction to the practice of statistics* (8th ed). New York: W. H. Freeman.

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

Grading and Activities:

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 and familiarize with the functions required to access the handouts and complete the homework assignments.

2. **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.
3. **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.
4. **CELL PHONES AND SIMILAR DEVICES MUST BE TURNED OFF AND MUST STAY STOWED AT ALL TIMES DURING CLASS.**
1. **Exams:** The two exams, midterm and final, presumably in-class, are worth 30% and 30% of the final grade, respectively.
5. **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.
6. **Grading policy:**

Final letter grade will be assigned as follows:

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

Academic Integrity Policy:

The Office of Student Conduct supervises issues related to violations of academic integrity (see <http://academicintegrity.rutgers.edu>). Please familiarize yourself with the university policy on academic integrity at http://academicintegrity.rutgers.edu/files/documents/AI_Policy_2013.pdf

Office of Disability Services:

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability

services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at:
<https://ods.rutgers.edu/students/registration-form>.

Course Schedule:

Tentative list of topics for discussions (by week)

Week	Topic	Assignments
1	Displaying and Describing Distributions Scatter Plots and Correlation Normal Distribution Theory	
2	Randomness and Probability Models Random Variables	Assignment I
3	Means and Variables of Random Variables Sampling Distributions of Means Confidence Intervals	
4	Inference for the mean of a population	Assignment II
5	Inference for Two Population Means	
6	Review	Assignment III
7	<u>Midterm</u>	
8	Regression Analysis Cautions about Correlation and Regression	
9	Linear Regression: Estimation and Inferences	Assignment IV
10	One-Way ANOVA	
11	Two-Way ANOVA (I)	Assignment V
12	Two-Way ANOVA (II)	
13	<i>Thanksgiving week -- No class</i>	Assignment VI
14	Review	
15	<u>Final Exam</u>	