

Spring 2017
Quantitative Research Methods in Education: Regression
16:300:519:01
3 Credits
Monday 4:30 - 7:30 PM
GSE Room 208

Instructor Name: Wenchao Ma	Email: wenchao.ma@gse.rutgers.edu
Instructor Name: Nathan Minchen	Email: nathan.minchen@gse.rutgers.edu
Phone Number: Please use email	Office: GSE Room 304
Office Hours: Monday, 3:30-4:30, or by appointment	Prerequisites or other limitations: Statistical Methods II, or Quantitative Research Methods in Education I
Mode of Instruction: <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input type="checkbox"/> Hybrid <input type="checkbox"/> Online <input type="checkbox"/> Other	Permission required: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Directions about where to get permission numbers:

Learning Goals:

The goals of the course are to help students:

- 1) gain an understanding of how data are analyzed and interpreted in non-experimental research;
- 2) recognize the different situations under which the use of multiple regression analysis is appropriate; and
- 3) implement standard and nonstandard regression analyses in SPSS.

Course Catalog Description:

This course focuses on techniques for analyzing non-experimental data, primarily multiple regression analysis. Topics covered in this class include matrix algebra, maximum likelihood estimation, multiple, partial and semi-partial correlations, regression diagnostics, model selection, dummy coding, analysis of covariance, and logistic regression.

Textbook:

Kutner, M. Nachtsheim, C. &, Neter, J. (2005). *Applied Linear Regression Models (4th ed.)*. New York: McGraw Hill.

Software:

SPSS Statistics 19.0. Chicago: SPSS Inc. (required)

Course Requirements and Grading:

1) Exams: The two in-class exams, midterm and final, are worth at least 30% and 50% of the final grade, respectively (see formula below for computing the Final Score). The exams may consist of multiple choice items, computations, and short answer/essay questions. Make-up exams will only be offered in extenuating circumstances with appropriate documentation.

2) Homework assignments: Approximately 11 homework assignments (worth a maximum 20% of the final grade) will be given throughout the semester. No late homework assignments will be accepted, but only the 10 highest homework assignment scores will be used. Homework assignments are required to be submitted via eCompanion, and multiple submissions are allowed within the availability period, but must be submitted before class begins (4:50) on the due date.

Each of the three components (homework assignments, midterm and final exams) will be out of 100 points. The final score will be computed as,

$$\text{Final Score} = \left(\frac{20\% \times \text{HW} + 30\% \times \text{Midterm} + 50\% \times \text{Final}}{80 + 20\% \times \text{HW}} \right) \times 100\%$$

The 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

Web site: eCompanion (eCollege)

SPSS will be used extensively to conduct statistical analyses for homework assignments and class exercises. For the exams, a calculator that performs basic operations will suffice.

Please complete reading assignments prior to each lecture.

Course Schedule:

Please note that this schedule is subject to changes as necessary.

Date	Topic	Lecture Notes #	Readings
January 23*	Review and Overview	1	1.1-1.2
January 30	Estimation and Inferences in Regression Analysis	2	1.3-1.5, 2.1-2.5
February 6	Inferences (Cont'd); Diagnostics and Remedial Measures	3	2.7-3.3
February 13	Matrix Approach to Simple Linear Regression	4	3.8-3.9, 5
February 20*	Multiple Regression I	5	6
February 27*	Multiple Regression II	6, 7	7
March 6*	Models for Quantitative and Qualitative Predictors	8	8
March 13	Spring Break		
March 20	MIDTERM EXAM		
March 27	Analysis of Covariance	9	Supplement
April 3*	Model Selection and Validation	10	9
April 10	Diagnostics and Remedial Measures	11	10, 11
April 17 *	Logistic Regression	12	14.1 - 14.5
April 24	Special Topics		
May 1 *	Review		
May 8	FINAL EXAM (Cumulative)		ALL

*: Wenchao Teaches

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. We will follow this policy without exception.

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



Graduate School of Education

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>.