

Quantitative Methods in Education: Regression
 16:300:519
 Spring 2015
 3 Credits
 Monday, 4:50 – 7:30 PM
 GSE Room 208

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Phone Number: 848-932-0848	Office: 10 Seminar Place, Room 343
Office Hours: Monday, 3:50-4:50, or by appointment	Prerequisites or other limitations: Statistical Methods II, or Quantitative Research Methods in Education: Introduction
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.

Class Materials/Textbooks:

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

Software Packages: SPSS Statistics 19.0. Chicago: SPSS Inc.
 Ox Console (Version 7.0). Download for free at www.doornik.com.

Course Requirements and Grading Policy:

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.

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.

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

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

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

SPSS Statistics 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.

Ox will be the programming language used for matrix manipulations and computations.

Reading assignments must be completed prior to each lecture.

Web Site: eCompanion (rutgersonline.net)

Class Schedule:

The following class schedule is subject to change, if necessary.

Date	Topic	Assigned Reading
January 26	Review and Overview	1.1-1.2
February 2	Regression Model, Estimation and Inferences	1.3-1.5,2.1-2.5
February 9	Inferences (II); Diagnostics and Remedial Measures	2.7-3.3
February 16	RM (II); Matrix Approach to Simple Linear Regression	3.8-3.9; 5
February 23	Matrix (II); Multiple Regression I	6
March 2	Multiple Regression II	7
March 9	Models for Quantitative and Qualitative Predictors	8
<i>March 16</i>	<i>Spring Break</i>	
March 23	MIDTERM EXAM	
March 30	Analysis of Covariance	Supplement
April 6	Model Selection and Validation	9
April 13	Diagnostics and Remedial Measures	10, 11
<i>April 20</i>	<i>No Class – NCME/AERA</i>	
April 27	Logistic Regression	14.1-14.5
May 4	Catch Up/Review	
May 11	FINAL EXAM (Cumulative)	

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>.