

SOC 6210 - LOGIC AND ANALYSIS OF SOCIAL RESEARCH II

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Fall Semester 2009
Wednesday 6:30-8:50
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Hours: Tuesday 2-7:30, after
class, and by appointment

I. INTRODUCTION AND COURSE OBJECTIVES

This course is designed to give students a basic introduction to regression analysis, which is one of the most widely-used multivariate statistical analysis techniques in sociology and the other social science disciplines. The knowledge you gain in this course will provide the foundation for learning more advanced statistical analysis techniques such as structural equation modeling, time-series analysis, hierarchical linear and nonlinear modeling, growth modeling, and hazard/survival analysis. I strongly encourage students who think they will be using a particular advanced technique (or set of related techniques) to take my advanced multivariate analysis course (SOC 6810), and courses on relevant topics offered by ICPSR summer seminars at the University of Michigan.

The goal of this course is for students to gain expertise **in performing and interpreting** OLS regression analysis and logistic regression analysis so that they can understand the published research in their own sub-specialties, assess its technical merits, and offer well-informed criticisms. In addition, students should be able to use the appropriate form of regression analysis to address research questions in their own areas of interest.

II. PREREQUISITES

An introductory course in descriptive and inferential statistics, and experience using the SPSS.

III. TEXTS

I have ordered the following required texts through the WMU Bookstore:

McClendon, McKee J. 2002[1994]. *Multiple Regression and Causal Analysis*. Prospect Heights, IL: Waveland Press, Inc.

Allison, Paul D. 1999. *Multiple Regression: A Primer*. Thousand Oaks, CA: Pine Forge Press.

Menard, Scott. 2002. *Applied Logistic Regression Analysis*. Second Edition. Thousand Oaks, CA: Sage Publications.

IV. SOFTWARE

SPSS is available in all the public computer labs on campus, as well as our departmental computing lab in the Kercher Center. Amos 17.0 is available only in our departmental lab, and it is the version I will use in class. There are two options if you wish to obtain your own personal copy of the SPSS full Graduate Pack which includes SPSS 17.0 and Amos 17.0.

1. **Rent a copy** online from: <http://www.e-academy.com/spss> The full Grad Pack (NOT the Base Pack) includes logistic regression and some other advanced techniques, including Amos, a structural equation modeling package that we will use in part of the course. The six-month rental of the Grad Pack is \$79.99; the twelve-month is \$139.99.
2. **Purchase a copy of the Grad Pack** from the Total Tech for \$188.00 (plus \$20 s & h). The primary disadvantage in purchasing the Grad Pack is that upgrading the software requires purchase of the updated Grad Pack.

V. COURSE POLICIES

1. **Late assignments will not be accepted.**
2. **No incomplete grades will be given in this course. If you fall behind, you will need to drop the course and re-register for it next fall semester. The last day to drop without penalty is NOVEMBER 9.**

VI. COURSE MATERIALS AVAILABLE VIA BLACKBOARD VISTA

Copies of lecture notes, SPSS examples, and assignments will be available on Blackboard/Vista about one week before each class. Students should print these materials before coming to class, or come to class with electronic copies on your laptop.

VII. REQUIREMENTS

A. Readings:

Below you will find a list of the required readings for this course. I expect you to do the readings before each class and to come prepared to discuss and ask questions about the material.

B. Homework Assignments:

There will be six structured homework assignments during the semester. The purpose of these assignments is to provide you with practice in doing multiple regression analysis and interpreting the results of such an analysis. These assignments will help you to prepare for course examinations and in doing the term paper (see below). In general, for each assignment you will be asked to perform an analysis of a data set using SPSS and then to write up what you did and why, and a complete interpretation of the results in the output. The written part of the assignment must be typed, double-spaced. Students must turn in both the SPSS output and the written portion of the assignment to receive credit. **Late assignments will not be accepted.** These assignments will count for **30%** of your final grade.

C. Examinations

There will be two examinations during the semester, a midterm and a final. Each will be worth **20%** of your final grade. The midterm examination will be held on October 21 during our regularly scheduled class time. The final examination will be administered during the final examination block assigned to this class, Wednesday, December 16, 7:15-9:15 P.M.

D. Term paper

Each student will write a short (about 10 pages double-spaced) research paper using OLS regression or logistic regression analysis to address a sociological

research question. The paper will constitute **30%** of your final grade. The research question and model/hypotheses to be tested should be derived from a sociological theory or theories. The goal of the paper is to demonstrate your ability to formulate a research question and appropriately use multiple regression/logistic regression analysis to test the theoretically-derived model/hypothesis.

The topic of your paper should be in your own substantive area. Appropriate data sets can be found on the ICPSR website: <http://www.icpsr.umich.edu> Alternatively, you may use any data set that is appropriate for testing your theory. I will be happy to assist in locating an appropriate data set for your paper.

References and citations must be in American Sociological Association format. The ASA style guide is available on Blackboard Vista.

The term paper **must** be organized into the following sections:

- I. Introduction/problem statement
 - Review of theoretical and empirical literature

- II. Data and variables
 - Description of data set
 - Operationalization of variables: One dependent variable and a **minimum of four independent variables.**

- III. Methods
 - Are the assumptions of OLS regression fulfilled?
 - What steps were taken to test for assumption violations?
 - How did you correct for assumption violations?
 - Can we have confidence in your results? Are they BLUE?

- IV. Results
 - Table your final results using the format in the *American Sociological Review*. (ASR is available via JSTOR)
 - Give a **complete interpretation** of your findings.

- V. Discussion/conclusions
 - Overview of key findings.
 - Do the findings support your theoretical model?
 - Limitations of study.
 - Directions for future research.

I would suggest analyzing your data for your term paper as we cover the various topics in the class. Accordingly, I have noted that you need to have your topic and data set in hand by **October 28** and a rough draft or outline to me by **November 18**.

VIII. GETTING HELP

I encourage you to work together in doing the data analysis for each homework assignment. However, each student is to do his/her own independent write up of each assignment.

I am always available to help you with assignments and understanding of course material during my posted office hours. However, you can also get help from me via e-mail. When I am working at home, I keep my e-mail open, and will respond to your questions promptly. I will provide help via e-mail even during weekends! So, if you get stuck, don't hesitate to contact me. I am always here to help!

IX. GRADING

All assignments, examinations, and the term paper will be graded on 100 point scales and weighted by the percentages noted above. Final grades will be curved to the highest score in the class. The grading scale is as follows:

93%+	A
88-92%	B/A
80-87%	B
78-79%	C/B
73-77%	C
68-72%	D/C
60-67%	D
< 60%	E

X. TENTATIVE SCHEDULE OF TOPICS, READINGS, AND ASSIGNMENTS

A. September 9 - Review of Basic Statistics and Bivariate Regression

Reading: McClendon Chapter 1

B. September 16 – Data Screening for Multiple Regression and Influence Analysis

Readings: McClendon Chapter 2; Allison Chapter 5

- C. September 23 & 30 - Multiple Regression: Detection and Correction of Multicollinearity, Non-normality, and Heteroskedasticity
- Readings:** McClendon Chapters 3 & 4; Allison Chapters 1–4; 6.6-6.8
- Assignment #1 Due September 23***
- D. October 7 - Dummy Variable Regression and Interaction Effects
- Readings:** McClendon Chapters 5, 7; Allison Chapter 8.5–8.7
- Assignment #2 Due***
- E. October 14 - Nonlinear Relationships
- Readings:** McClendon Chapter 6; Allison Chapter 8.1–8.4
- Assignment #3 Due (returned on Tuesday, October 20 during office hours)***
- F. October 21
- Midterm Examination (covers sections A-D)**
- G. October 28 & November 11 [No class November 5, ASC meeting] – Factor Analysis, Binary and Multinomial Logistic Regression; Ordinal Regression
- Readings:** Menard (All)
- Term Paper Topic & Data Due October 28**
- H. November 18 - Missing Data and Multiple Imputation with Amos 17.0
- Reading:** Schafer, Joseph L. and John W. Graham. 2002. “Missing Data: Our View of the State of the Art.” *Psychological Methods* 7:147-177. (available online from WMU library)
- Assignment #4 Due***
- Term paper rough draft/detailed outline due.**
- No Class November 25, Thanksgiving Break***

I. December 2 - Path Analysis with Amos 17.0

Reading: McClendon Chapter 8

Assignment #5 Due

J. December 9 - An Introduction to More Advanced Techniques & Review for Final Examination

Assignment #6 Due (returned on Tuesday, December 15 during office hours)

K. December 16

7:15-9:15 Final Examination (covers sections A-I)

Term Papers Due