ADVANCED STATISTICAL METHODS IN SOCIOLOGY (SOCIOLOGY 760)

Instructor: Dr. Aki Roberts
Email: aki@uwm.edu (this is the best way to reach me. I will respond within 24 hours.)
Office: BOL 740
Office hours: noon-3:00 pm Thursdays or by appointment
Office Phone: (414) 229-6943

TA: Cathryn Miller
Email: millercf@uwm.edu
Office: BOL 741
Office hours: M 9:30-11:30

Prerequisites: Passing grade in Sociology 461 (at least 85% on the final exam OR overall course score) OR at least 85% on the diagnostic exam. In addition a student should be comfortable with reading equations and mathematical symbols, and the kind of simple manipulation of equations that you learned in high school and college algebra.

Subject and Course Overview: This course will cover topics in regression, including the ordinary least squares regression assumptions, and violations of those assumptions (e.g. misspecification, autocorrelation and heteroscedasticity) with matrix algebra. The course also covers various multiple regression techniques such as dummy variables, interaction effects, and logged variables. Students will learn practical analysis of data and interpretations with Stata in the lab. Students will learn concepts and gain in-depth understanding of regression in the lectures.

Format: The course includes lectures and labs. The lectures cover concepts and ideas, and the labs cover basic matrix algebra and how to use Stata.

Statistical Software: Students are required to use Stata for some of the homework and for the final paper.

Recommended textbook for lecture: We will mostly rely on the lecture notes, but as an optional textbook students can purchase Statistical Methods for Social Scientists by Hanushek & Jackson. We will focus on Chapters 3, 4, 5, and 6.

Required textbook for lab: Gentle Introduction to Stata (5th Edition) by Stata Press. The textbook can be ordered online through the bookstore’s website (http://uwmbookstore.aux.uwm.edu/home.aspx).

Lecture Notes: I will send the lecture notes at least a few hours before each class. I recommend that students bring a hard copy of the lecture notes and take additional notes on them during class.

Homework: There will be 4 homework assignments. Use of Stata is required, except for HW 1. The TA will grade the homework assignments. Students can get help from me or the TA on homework assignments. Students also are allowed to get help from each other on assignments, but cannot copy each other's answers (resulting in identical wording, duplication of unique calculation mistakes, etc.). This is considered plagiarism. All students involved in this kind of plagiarism will receive an F for their course grade and will be reported to University authorities.
HW 1 – Matrix algebra

HW 2 – Basic Stata (including recoding, descriptive statistics, correlation, basic multiple regression)

HW 3 – Multiple regression with interaction effects

HW 4 – Multiple Regression with logged variables

**Exams:** The midterm (after spring break) and the final exam (the last day of the class) will be closed book. The final exam will cover the entire semester, but with some emphasis on material after the midterm. I will announce the exact date for the midterm later, but I will give at least two weeks lead time.

**Final Paper:** The final paper will involve analysis (using techniques covered in the course) of some data set chosen by the student (e.g. from ICPSR data archives). The paper will be structured like a journal article (literature review and so on). It is important to begin thinking about data early in the semester. I explain the paper format in more detail in the handout (“Organization of Final Paper”).

**Quality of Class Participation:** The class participation grade will be affected by asking too many unproductive or off-topic questions, or questions that indicate insufficient outside study time.

**Academic Misconduct:** Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors. Policies for addressing students cheating on exams or plagiarism can be found at the following: [http://www4.uwm.edu/osl/dean/conduct.cfm](http://www4.uwm.edu/osl/dean/conduct.cfm). According to the UWM policy, I am required to report all suspicious cases to the Dean of Students office. The sanctions for academic misconduct include F for the course, removal from the course, and academic probation and suspension.

**Makeup Assignments and Exams:** Makeups are discouraged. Sometimes, however, they are necessary due to student or family illness or some other emergency. To be allowed to take a makeup, the student must present appropriate documentation. Then I will decide whether a makeup exam is appropriate. Please note that not all reasons for a makeup are accepted (e.g. family vacation).

**Course Schedule (subject to change):**

[Lecture]

Review of Undergraduate Statistics

Theoretical Background of Regression (Ideas of Replications and True Model)

Ordinary Least Squares (OLS) Assumptions

Multiple Regression with Interaction Effects

Multiple Regression with Logged Variables

Some Violations of OLS Assumptions and How to Correct Them (Including Autocorrelation and Heteroskedasticity)
Grading: Final course grades are based on overall scores calculated by weighting different graded elements as follows:

- Midterm Exam: 20%
- Final Exam: 25%
- Final Paper: 25%
- 4 homework assignments 28% (7% each)
- Attendance/Quality of class participation 2%

Letter Grade Conversion

A (94-100)
A- (90-93)
B+ (87-89)
B (83-86)
B- (80-82)
C+ (77-79)
C (73-76)
C- (70-72)
D+ (67-69)
D (60-66)
F (0-59)

UNIVERSITY AND SOCIOLOGY DEPARTMENT POLICIES

The Secretary of the University maintains a web page that contains university policies that affect the instructor and the students in this course, as well as essential information specific to conduct of the course. The link to that web page is: http://www4.uwm.edu/secu/SyllabusLinks.pdf

Students with Disabilities. Verification of disability, class standards, the policy on the use of alternate material and test accommodations can be found at the following: http://www.uwm.edu/Dept/DSAD/SAC/SACltr.pdf

Religious Observances. Policies regarding accommodations for absences due to religious observance are found at the following: http://www4.uwm.edu/secu/docs/other/S1.5.htm

Students called to active Military Duty. Accommodations for absences due to call-up of reserves to active military duty are found at the following: http://www4.uwm.edu/current_students/military_call_up.cfm

Incompletes. You may be given an incomplete if you have carried a course successfully until near the end of the semester but, because of illness or other unusual and substantiated cause beyond your control, have been unable to take or complete the final examination or to complete some limited amount of course work. An incomplete is not given unless you prove to the instructor that you were prevented from completing the course for just cause as indicated above. The conditions for awarding an incomplete to graduate and undergraduate students can be found at the following: http://www4.uwm.edu/secu/docs/other/S31.pdf

Discriminatory Conduct (such as sexual harassment). Discriminatory conduct will not be tolerated by the University. It poisons the work and learning environment of the University and threatens the
careers, educational experience and well-being of students, faculty and staff. Policies regarding discriminatory conduct can be found at:  http://www4.uwm.edu/secu/docs/other/S47.pdf

**Academic Misconduct.** Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors. Policies for addressing students cheating on exams or plagiarism can be found at the following: http://www4.uwm.edu/osl/dean/conduct.cfm

**Complaint Procedures.** Students may direct complaints to the Sociology Department Chair or the Associate Dean for Social Sciences in the College of Letters & Sciences. If the complaint allegedly violates a specific university policy, it may be directed to the Sociology Department Chair, the Associate Dean for Social Sciences in the College of Letters & Sciences, or to the appropriate university office responsible for enforcing the policy. Policies may be found at: http://www4.uwm.edu/secu/docs/other/S49.7.htm

**Grade Appeal Procedures.** A student may appeal a grade on the grounds that it is based on a capricious or arbitrary decision of the course instructor. Such an appeal shall follow the established procedures adopted by the department, college, or school in which the course resides or in the case of graduate students, the Graduate School. These procedures are available in writing from the respective department chairperson or the Academic Dean of the College of Letters & Science. Procedures for undergraduate student grade appeal can be found at http://www4.uwm.edu/letsci/upload/grievance_procedure.pdf Procedures for graduate student grade appeal can be found at http://www.graduateschool.uwm.edu/students/policies/

**Final Examination Policy.** Policies regarding final examinations can be found at the following: http://www4.uwm.edu/secu/docs/other/S22.htm

**Book Royalties.** In accord with Department of Sociology policy, the royalties from the sale of faculty-authored books to students in their classes are donated to a UWM Foundation/Sociology Account to support future awards and activities for UWM students in Sociology.

Update 06/2012