

Statistics II (CRIM 783)

Professor: Dr. Sue-Ming Yang

Semester/Year: Fall, 2017

Class Day/Time: M/1:30 pm - 4:10 pm

Class Location: Thompson Hall 1017

Email: syang10@gmu.edu

Office: Enterprise Hall Room 306

Office Hours: Mondays 4:30pm to 5:30pm, or by appointment

Course Goals and Objectives

- Provide students with the ability to estimate advanced analytical techniques in Criminology and Criminal Justice (including factor analysis, survey design, longitudinal data analysis, and power analysis)
- Provide students with the ability to understand the appropriate techniques for analyzing criminal justice data (i.e. variations on the generalized linear model)
- Provide students with the ability to test hypotheses using quantitative analysis techniques for research papers, reports, presentations, theses, etc.
- Provide students with an introduction to data analysis programs
- Provide students with the ability to evaluate the statistical research of scholars in Criminology and Criminal Justice

Course Requirements and Policies

1. Attendance:

Attendance is both expected and required. Attendance will be taken at each course session, but will not count toward your grade in this course. Research has demonstrated a positive correlation between course attendance and course grades, so it is in your own interest to attend class regularly.

2. Readings:

Reading assignments appear on the course outline. Students should complete the assigned readings BEFORE coming to class on the day that the readings are assigned.

3. Computer Programs:

One of the goals of this class is to familiarize students with various statistical programs.

While there are many options out there, I will try to use SPSS when possible. Please make sure you have access to Mason's virtual computer lab before class.

➤ **Here are some other options for getting access to SPSS outside of class:**

- 1) Use SPSS in the computer labs on campus (no cost; but may not be practical or convenient for you).
- 2) Use Mason's Virtual Computing Lab for distance access to SPSS through Mason's server on your own computer.
- 3) Purchase and download SPSS from the web. For example, you can get IBM SPSS Statistics 21, Base GradPack (PC or Mac) with a 6-month license or 12-month license from <http://www.onthehub.com/spss/> (6-mo ~\$40; 12-mo ~\$70).

4. Homework (200 points):

There will be four homework assignments covering the variety of topics during the course. The first assignment will require you to perform an interpret regression analyses. The second homework will require you to demonstrate your knowledge of categorical data analysis (logistic regression models). The third assignment will require you to estimate a factor analysis. The fourth assignment will require you to demonstrate your knowledge of trajectory analysis.

5. Final Course Project (200 points):

For the **data analysis project** you will complete an original analysis of a primary or secondary dataset. The project can address any issue you're interested in and you need to select an appropriate statistical approach covered in our class for your project. For those of you who have formulated a topic for your masters thesis, this project may serve as the empirical section "attached" to a thesis proposal or the actual thesis using pre-existing data. Thus, the intention is that you will actually work with the data that you intend to use in your thesis. Of course, this might not be possible due to many complications. It is also possible that the dataset might be too large and complicated. Thus, you could to use a small subset of the data, or a related, more accessible dataset. The point of the project is not to finish your thesis, but rather to get you started, and give you some practice working with data within the context of a problem.

6. Extra Credit/Late Policy:

There will be NO extra credit given in this course. Do not ask for it. No late work will be accepted! You must turn in all assignments during class on the scheduled dates.

7. Grading:

<u>Assignment</u>	<u>Maximum Points</u>	<u>% of total grade</u>
4 Homework	200	20.00%
2 Exams	300	60.00%
Data Analysis Project	200	20.00%

Total Points Possible: 600

<u>Earned Points</u>	<u>Approximate Percent</u>	<u>Grade</u>
540-600	90%-100%	A
480-539	80%-89.9%	B
420-479	70%-79.9%	C
360-419	60%-69.9%	D
359 and Below	below 59.9%	F

Required Text:

Weisburd and Britt. 2014. Statistics in Criminal Justice.

Recommended Texts

- 1) Agresti (1990). Categorical Data Analysis. Wiley & Sons
- 2) Barbara G. Tabachnick and Linda S. Fidell (2007). Using Multivariate Statistics (5th Edition).
- 3) Pindyck, Robert S. and Daniel L. Rubinfeld, Econometric Models and Economic Forecasts, 4th ed., Irwin McGraw-Hill.
- 4) John Fox (2008). Applied Regression Analysis and Generalized Linear Models (2nd edition).

Students with Disabilities: If you are a student with a disability and you need academic accommodations, please inform the instructor and contact the Office of Disability Resources at 703.993.2474. All academic accommodations must be arranged through that office. See <http://ods.gmu.edu> for more information.

Cell Phones and technology: All cell phones, pagers and other forms of communication must be silenced during the class period. If you need to have your device on for emergency purposes inform the professor as well as take steps to minimize the disturbance to the class. This includes texting as well as speaking. Students who use laptops should use them for class purposes, as other uses can be a distraction for other students in the course.

Statement on Academic Integrity: I expect adherence to the University Honor Code. If I witness any violations of the Honor Code, I will follow the standard reporting procedures as outlined in the University Handbook. Most forms of cheating are self-evident and need no elaboration here. Plagiarism is not always well understood by students. Plagiarism is representing another's work as one's own. This extends to ideas as well as words. That is, if you paraphrase the ideas expressed in something you have read, you need to cite the author and source. Exact phrases, sentences, etc. from someone else's writing must be quoted and proper citation given.

FINAL COMMENTS

This course has a reputation of being difficult for some students. It is imperative that you keep up with weekly readings and assignments in order to do well. If you find yourself falling behind or struggling with the material, do not hesitate to take advantage of the office hours and help sessions available to you. My goal as an instructor and your goal as a student are one and the same – for you to do well in this course by learning to grasp abstract statistical concepts in a way that allows you to understand their importance for the field of criminology and criminal justice. We are all in this together, and our success and failure depends on our ability to work together.

COURSE OUTLINE

08/28	Introduction of Various Statistics Methods and review of materials Simple Regression recap Readings: Fox Chapter 2
09/04	Labor Day (No class)
09/11-09/18	From Simple Regression to Multiple Regression Readings: Fox Chapter 5; Weisburd and Britt: Chapter 15
09/25-10/02	Multiple Regression Model: Categorical Independent Variables Readings: Fox Chapter 6; Weisburd and Britt Chapter 16, 17 (HW1 Due 09/25)/ (Paper Topic due 10/02)
10/10	Exam 1 **Note that the class time changes due to Columbus Day
10/16-10/23	Categorical Independent Variables Continued and Model Diagnostics Reading: Weisburd and Britt Chapter 17; Fox Chapter 7 (HW2 Due 10/30)
10/30-11/13	Regression with A Categorical Dependent Variable (Logistic and Multinomial Logistic Regression) Reading: Weisburd and Britt Chapter 18-19; Fox Chapter 14; (HW3 Due 11/13)
11/20	Exam 2
11/27-12/04	Factor Analysis or HLM Reading: TBA (HW4 Due TBA)

FINAL PROJECT DUE: December 18th

****Please note that the topics are subject to change after the initial discussions in class. I will try to cover important statistical approaches in this class. However, I will give priorities to methods that students intend to use for their projects**