Syllabus

SOCI 6312: Intermediate Social Statistics

Spring 2006 (3 credits)
Wednesdays, 2:00 – 5:00 pm
203 Clement Hall
Office hours: Tuesdays 10:00 am – 12:00 noon
Thursdays 3:00pm – 5:00pm, and Mondays by appointment

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Course Description

Welcome to Intermediate Social Statistics (SOCI 6312). This course provides graduate students with the tools to conduct and understand multivariate statistical research. The course emphasizes how to use, apply, interpret and understand statistical methods for social scientific research. This course does not emphasize abstract mathematical concepts or memorization of complex formulas, although we do use both. Instead, I will stress the ability to apply and utilize advanced statistical techniques in actual research projects. To this end, we will take a systematic approach to the exposition of the general linear model primarily for continuous dependent variables, but also for regression with categorical and limited dependent variables. You will learn to use computerized statistical techniques using specialized software programs (SPSS, Stata and/or SAS).

The course is divided into five sections. In the first section we will understand statistics as a component of the research process. Here we review the building blocks for regression analysis. This section will also help to refresh your memory from previous statistics courses and to provide a deeper, more formal presentation of familiar concepts. In the second section we focus on the assumptions and mechanics of the classical linear regression model, with an understanding of bivariate correlation and regression. From this part of the course you will have a good mechanical knowledge of regression analysis. The next section, part three of the course, extends your knowledge of regression from bivariate to multivariate techniques, e.g., multiple linear regression. This section will provide you with a deeper theoretical and applied understanding of the flexibility and limitations of the general linear regression model for social science data. In the fourth section we will examine common problems or regression diagnostics. In the final part of the course we will examine other, non-linear regression techniques.

You will need to spend time in the computer lab working on assignments and becoming familiar with statistical software and data analysis. This time is in addition to our regularly scheduled class time. For some class meetings, we will spend part of the normal class period in the lab (Clement Hall 219 or 217). At other times, however, you will need to find time to use the lab on your own.

Prerequisites for this course include: Social Statistics (SOCI 3311) and Methods of Social Research (SOCI 3322).

Evaluation will be based on exercises (about 10) over the course of the semester. For all but the final exercise (which is weighted more heavily than others). See below for details.

* This course is crosslisted for undergraduate enrollment as SOCI 4312, which has a separate syllabus.
**Required Reading and Course Materials**

You will need two books listed below. Selected readings will be available as handouts and/or on the internet as a web-linked document [W] from WebCT. Required data files will be made available via UMDrive.


The computer lab is an essential component of the course, thus you must have an active UM email account (UUID & password) for this course. In the lab, you will have access to Stata, SPSS and SAS for statistical analyses. You may also use MS Excel and MS Word to complete your assignments. You will need to activate your UMDrive, http://umdrive.memphis.edu so that you may access various data files for the course.

**Course Guidelines**

1. Show up, and show up on time. Simply put, you will not pass the course if you don’t come to class. Your regular, punctual attendance in class meetings for this course is required; you are expected to be here at the beginning and stay through until the end of each class meeting.

2. It is critical that you keep up with assignments. Each lesson builds upon previous lessons. Moreover, the way to become proficient with statistical analysis is through practice. Late assignments will be penalized for each day that they are late. No assignment will be accepted after a week’s time (seven days) without an extenuating circumstance (e.g., thermonuclear war, planets collide, or similar catastrophe).

3. Review the material early and often. Students who wait several days to review the material or tackle the homework have trouble keeping up with the material.

4. It’s often helpful to work in groups. I encourage students to work together, but to a point. You are encouraged to discuss assignments and data preparation with each other and with me. The assignments you submit, however, must reflect your own work. For example, on computer assignments that require you to select variables for analysis, everyone is expected to choose their own variables and to interpret the results on their own. If a group selects the same variables, estimates the exact models and collaborates on interpreting their results, every student in the group will all do the assignment over (with a penalty).

5. You will find that I am a reasonable person who designs straightforward assignments. I am not interested in tricking or confusing you, and I want you to do well in the course. Please see me if you have any questions or encounter any difficulties regarding the course.

6. Believe it or not, statistics can be fun. At least it doesn’t have to be so bad!
Assignments and Grading

You will complete about ten (10) regular homework assignments as well as the final assignment over the course of the semester. Assignments will be distributed in class most weeks and are normally due the following week in class. All assignments should be typed. Assignments that require Stata, SPSS or SAS must also include output and command log (syntax).

In computing your final grade for the course, I will drop your lowest grade on any of the regular homework assignments, which when totaled are worth 80% of your final grade. The final graduate assignment counts for 20% of your final grade. Assignments are graded as follows:

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<th>Grade</th>
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<tr>
<td>✓+</td>
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<tr>
<td>✓</td>
<td>B</td>
<td>8.5</td>
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<tr>
<td>✓-</td>
<td>C</td>
<td>7.0</td>
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<tr>
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Final grades will be lowered for poor attendance. Final grades may be raised in consideration of class participation and improvement over the term. No extra credit and no incompletes.

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<tr>
<th>Final Grade</th>
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<th>Final Grade</th>
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<td>C+</td>
<td>78- 79</td>
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<td>93- 98</td>
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<tr>
<td>A-</td>
<td>90- 92</td>
<td>C-</td>
<td>70- 72</td>
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<tr>
<td>B+</td>
<td>88- 89</td>
<td>D+</td>
<td>68- 69</td>
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<tr>
<td>B</td>
<td>83- 87</td>
<td>D</td>
<td>65- 67</td>
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<tr>
<td>B-</td>
<td>80- 82</td>
<td>F</td>
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Course Schedule†

This outline provides a rough estimate of the time we will spend on each topic. The actual schedule is subject to change as necessary during the semester.

Week #1: January 17, 2007  
Topic: Course Introduction & Statistical Review  
Read: AF Ch. 1-3 (& Ch. 4-6 skim/review)

Week #2: January 24, 2007  
Topic: Bivariate Relationships; Ordinary Least Squares (OLS) Regression: Assumptions, concepts & mechanics  
Read: AF Ch. 9

Week #3: January 31, 2007  
Topic: OLS Regression: Estimation & hypothesis testing in the bivariate context  
Read: Allison Ch. 5

Week #4: February 7, 2007  
Topic: The logic of multivariate analysis  
Read: AF Ch. 10; Allison Ch. 1

† Schedule and reading are subject to change.
Week #5: February 14, 2007 ♡ Happy Valentines Day!
   Topic: Multiple Regression: An introduction & its functional form
   Read: AF Ch 11; Allison Ch. 2 & 6

Week #6: February 21, 2007
   Topic: Multiple Regression: Estimation & hypothesis testing
   Read: AF Ch 12; Allison Ch. 4

Week #7: February 28, 2007
   Topic: Multiple Regression: Group differences, dummy variables & interaction terms
   Read: AF Ch. 7 (skim/review) & 13

Spring Break March 7, 2007 Spring Break 😊

Week #8: March 14, 2007
   Topic: Regression Diagnostics: Omitted variables, measurement error & multicollinearity
   Read: Allison Ch. 3 & 7

Week #9: March 21, 2007
   Topic: Regression Diagnostics: Nonlinearity, heteroskedasticity & variable transformation
   Read: AF Ch. 14; Allison Ch. 8

Week # 10: March 28, 2007
   Topic: Logistic Regression: binomial
   Read: AF Ch. 8 (skim/review) & 15; Allison pp. 183-5

Week #11: April 4, 2007
   Topic: Logistic Regression: multinomial & ordered
   Read: AF Ch. 15 (skim/review); Allison pp. 183-5

Week #12: April 11, 2007
   Topic: Advanced Topics: Event history & path analysis
   Read: AF Ch. 16; Allison pp. 177-183, 185-6

Week #13: April 18, 2007
   Topic: Applications: Assessing current research
   Read: TBA: Research articles

Week #14: April 25, 2007
   Topic: Applications & Wrap up
   Read: TBA: Research articles

FINAL ASSIGNMENTS DUE BY 1:00 P.M. ON WEDNESDAY, MAY 2nd, 2007