**SOCY-6111: Data II**

**Fall Semester 2016**

Instructor: Ryan K. Masters

Office: Ketchum Hall 264

Office Hours: Tuesdays and Thursdays 2 – 3:30pm. Also by appointment.

Stata Office Hours (i.e., “Lab”): Fridays, 2:30 – 4:30pm

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**Course Overview**

This course is intended to develop your understanding and use of statistical techniques for answering sociological questions. The course has two general aims:

(1) Expand your understanding of statistical techniques for sociological inquiry.

(2) Develop efficient and sound use of Stata for quantitative analyses of sociological questions.

Overall, my hope is for you to develop understandings of quantitative thinking, learn skills necessary to effectively describe and analyze quantitative data, and adopt a critical approach when reading and assessing others’ empirical claims.

*Statistics*

The core of this course will be devoted to expanding your understanding and use of statistical techniques. I will review ordinary least squares (OLS) and maximum likelihood estimation (MLE), as well as introduce you to a few extensions of generalized linear models (GLM). We will also cover issues related to measurement, model building, interpretation of results, collinearity, omitted variable bias, other violations of B.L.U.E., two-way effects, and other important considerations in quantitative research.

*Computer Programming*

Statistical analyses in the social sciences are now entirely performed by computer programs. Gone are the days of hand computations, bean counting, and clunky card-reading machines. Thus, this course will feature a heavy dose of statistical analyses using Stata programming as well as interpreting Stata-generated output. All Stata scripts will be provided so that you can load, edit, and analyze raw data on your own time/terms. I strongly encourage to work with one another when practicing Stata, and I also strongly urge you to attend Friday Stata Labs.

Optional Stata lab/office hours will be a central component of Data II.

**Course Meetings**

Class: Wednesday, 4:30-7:00 pm EDUC 132

Stata Lab: Fridays, 2:30-4:30 pm Ketchum Hall 1B24 (Bring your laptop!)

**Course Material**

Applied Regression: An Introduction. Sage Series: Quantitative Applications in the Social Sciences. By Colin Lewis-Black and Michael Lewis-Black. Purchase online:

<https://us.sagepub.com/en-us/nam/applied-regression/book244616>

Referred to as “LB” on D2L.

Understanding Regression Assumptions. Sage Series: Quantitative Applications in the Social Sciences. By William D. Berry. Purchase online: <http://www.sagepub.com/books/Book3056?seriesId=Series486&sortBy=defaultPubDate+desc&rows=50&pager.offset=50&fs=1>

Referred to as “Berry” on D2L.

Logistic Regression: A Primer. Sage Series: Quantitative Applications in the Social Sciences. By Fred Pampel. Purchase online: <http://www.sagepub.com/books/Book10146?seriesId=Series486&rows=50&sortBy=defaultPubDate%20desc&fs=1#tabview=toc>

Referred to as “Pampel” on D2L

Online Readings: I will post weekly readings and Stata material to D2L.

Recommended Texts:

Counterfactuals and Causal Inference: Methods and Principles for Social Research. By Stephen L. Morgan and Christopher Winship. Referred to as “M&W” in the schedule. Either 1st or 2nd Edition is fine.

<http://www.cambridge.org/us/academic/subjects/sociology/sociology-general-interest/counterfactuals-and-causal-inference-methods-and-principles-social-research>

Regression: A Second Course in Statistics. By Thomas H. Wonnacott and Ronald J. Wonnacott.

<http://www.amazon.com/Regression-A-Second-Course-Statistics/dp/0898749700>

A Tale of Two Cultures: Qualitative and Quantitative Research in the Social Sciences. By Gary Goertz and James Mahoney.

<http://press.princeton.edu/titles/9898.html>

**Course Requirements and Assessment**

There will be 300 possible points in this course, broken down as follows:

Assessment Points

Homework Assignments (5) 100 (20 points each)

Midterm (in-class) 100

Final (take-home) 100

POLICIES & ACCOMMODATIONS

**Accommodations**

1. Appropriate academic accommodations will be provided to students with disabilities. Please contact the Disability Services office located in Center for Community as soon as possible to obtain documentation: N200 (303-492-8671) <http://disabilityservices.colorado.edu/> . Guidelines for addressing temporary medical conditions and/or injuries can be found at <http://disabilityservices.colorado.edu/general-information/temporary-injuries>
2. The University of Colorado at Boulder has both legal and moral obligations to accommodate students who choose to abstain from classes and/or miss scheduled examinations in order to observe holidays. If you plan to be absent from class to observe a holiday, please notify me of any scheduling conflicts by September 7.

**Course Expectations and Honor Code**

1. I expect academic integrity (and the university requires it!). While I encourage you to collaborate with one another on exercises, support each other in studying, and edit each other’s work, you are expected to turn in original work and complete all exams on your own. Students caught cheating will be reported to the Honor Code Council, and will also have their course grade justly penalized. Information about the Honor Code can be found at <http://www.colorado.edu/policies/student-honor-code-policy>
2. Every homework assignment shall be turned in during the first five minutes of class on the scheduled due date. All assignments turned in after this time on the same day or emailed on the due date will be punished two points. Please type your homework assignments, exams, and papers.
3. Please know that the syllabus and course schedule are not set in stone. I reserve the right to change the basic course requirements, due dates, and overall content and schedule with adequate notice to students via D2L, class announcements, and/or email.

**Classroom Etiquette**

Please refrain from conversing with your neighbors during class. This can be quite disruptive to fellow students around you.

Laptops are not needed in class, but please bring one to the Stata Lab if attending.

Turn off all cell phones before class begins.

You and I both have the responsibility for maintaining a professional learning environment. Those who fail to adhere to basic modicum of adult behavior may be subject to discipline. Please be courteous and sensitive to alternative perspectives, especially when dealing with topics pertaining to race, culture, religion, sexuality, political ideology, nationality, gender identity & expression, age, and disability.

Please know that the University provides me a class roster containing your picture and legal name. I will happily honor your request to remove your picture and/or address you by an alternative name if you like. Please notify me early in the semester.

**Email Policy**

Include “6111” in the subject line of all course-related emails.

**Respect, Discrimination, and/or Harassment**

Please respect your classmates. Topics discussed in class may be interpreted as contentious by some, and I would like everyone to feel comfortable enough to freely and openly participate. I will do my best to present the material and discuss the topics in an open and inclusive manner.

**Fall 2016 Data II Schedule**

**August 24: CLASS CANCELED (American Sociological Association Annual Meeting)**

**August 26: LAB CANCELED (American Sociological Association Annual Meeting)**

**August 31**

Syllabus, Course Overview, and Expectations: What you Know and What We’ll Cover

**September 2**

Stata Basics 1: Loading and Cleaning Data, Labeling and Editing Measures

**September 7**

Regression Models and Measurement: Means, Covariance, and “Error”

**September 9**

OLS and Observational Data: Berkeley Admissions Example

**September 14**

Review of OLS and B.L.U.E.

**September 16**

OLS and Coefficients: Interpreting Xs and Ys and Model Output

**September 21 CLASS CANCELED (Interdisciplinary Association for Population Health Sciences Annual Meeting)**

**September 23 LAB CANCELED (Interdisciplinary Association for Population Health Sciences Annual Meeting)**

**September 28**

Violations of B.L.U.E. and Estimators: Unbiasedness, Efficiency, and Consistency.

**September 30**

Relaxing OLS Assumptions I

**October 5**

Violations of B.L.U.E. and Model Diagnostics

*Homework #1 Due*

**October 7**

Relaxing OLS Assumptions II

**October 12**

Regression Estimators of Causal Effects: Multivariate OLS and Identification

*Homework #2 Due*

**October 14**

Controls: Omitted Variable Bias

**October 19**

Model Building Using Regression

*Homework #3 Due*

**October 21**

Mechanisms: Mediators and Moderators I

**October 26**

Advanced Model Fitting: Selection and Multiple Interactions

**October 28**

Advanced Model Fitting: Selection and Multiple Interactions

**November 2**

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**November 4: OPTIONAL LAB**

**November 9**

Categorical Data Analysis I: Contingency Tables, Odds, and Probabilities

**November 11**

Contingency Tables: Odds and Probabilities

**November 16**

Categorical Data Analysis II: Maximum Likelihood Estimation and Logistic Regression

**November 18**

Logit Models: Fitting, Interpreting, and Presenting

**November 23: CLASS CANCELED (Thanksgiving Holiday Break)**

**November 25: LAB CANCELED (Thanksgiving Holiday Break)**

**November 30**

Categorical Data Analysis III: Model Fitting

*Final Assigned*

**December 2**

Logit Models II: OVB, Mediating and Moderating Associations

**December 7**

Categorical Data Analysis IV: Functional Forms and Multiple Interactions

*Homework #5 Due*

**December 9**

Model Building with Categorical Data

**December 15**

Final Due