

**Professor:** Matthew Wilson  
**Email:** mhwilson1@mix.wvu.edu  
**Office:** 315D Woodburn Hall  
**Office Hours:** T & Th 11:30 PM-12:30 PM

**Room:** 306E Woodburn Hall  
**Dates:** 08/17/16 - 12/06/16  
**Time:** T 1:30 PM-4:15 PM

**COURSE DESCRIPTION:** This course provides an introduction to advanced methods in quantitative analysis, building on previous experience with linear regression. The class covers the use of maximum likelihood estimation (MLE) to identify models for which there are categorical or limited dependent variables. After comparing principles of ordinary least-squares regression (OLS) to MLE, the course addresses four classes of dependent variables: binary, ordinal, categorical, and count data. For each, students are expected to complete a problem set in which they practice running and interpreting models. Students are also expected to submit a 15-page paper containing an original analysis based on the skills taught in this class. The course concludes by discussing more advanced techniques.

**COURSE REQUIREMENTS:** Students are expected to (1) read assigned materials before the start of each class; and (2) regularly participate in lectures and complete all assignments

**GRADES:** Problem sets (4 @ 15%) Research Design/Analysis (25%) Participation (15%)

**Required READING MATERIALS:**

Long, J. Scott. 1997. *Regression Models for Categorical and Limited Dependent Variables*. Thousand Oaks, CA: Sage Publications

**CLASS SCHEDULE:**

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|-------|--|
| 8/23  | Introduction, <i>Ordinary Least Squares Regression</i><br>[Read: Chapter 1 & Chapter 2 (2.1-2.5) and assigned article(s)]                        |
| 8/30  | <i>Introduction to Maximum Likelihood Estimation</i><br>[Read: Chapter 2 (2.6)]  |
| 9/06  | <i>The E-M algorithm, Levels of Measurement, and Distributions</i>   |
| 9/13  | <i>Binary models: logit and probit</i><br>[Read: Chapter 3; Problem set 1 assigned]  |
| 9/20  | <i>Binary models, continued</i> [Read assigned article(s)]   |
| 9/27  | <i>Ordinal models: ordered logit and probit</i><br>[Read: Chapter 5; Problem set 1 due, Problem set 2 assigned]                                  |
| 10/04 | <i>Ordinal models, continued</i> [Read assigned article(s)]  |
| 10/11 | <i>Categorical models: multinomial logit</i><br>[Read: Chapter 6; Problem set 2 due, Problem set 3 assigned]                                     |
| 10/18 | <i>Categorical models, continued</i> [Read assigned article(s)]  |
| 10/25 | <i>Count models: poisson and negative binomial regression</i><br>[Read: Chapter 8 (8.1-8.3, 8.6-8.7); Problem set 3 due, Problem set 4 assigned] |
| 11/01 | <i>Count models, continued</i> [Read assigned article(s)]  |
| 11/08 | [ <i>Election Day: No class</i> ]  |
| 11/15 | <i>Zero-inflated models: poisson and negative binomial regression</i><br>[Read: Chapter 8 (8.4-8.5) and assigned article(s); Problem set 4 due]  |
| 11/22 | [ <i>Fall break: No class</i> ]  |
| 11/29 | <i>More advanced methods</i>   |
| 12/06 | <i>Recap</i> [Research Design/Analysis due]  |

**CLASS POLICIES:**

*Failure to follow class rules will affect the student's participation grade.*

1. The use of cell phones is not permitted.
2. Computers are allowed to take notes only.
3. Please do not read outside materials.
4. Grades will not be changed if an issue is reported after two weeks have passed.

**ADDITIONAL INFORMATION:**

Academic Integrity. The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the West Virginia University Academic Catalog at <http://catalog.wvu.edu/undergraduate/coursecreditstermsclassification/#academicintegritytext>. Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.

Adverse Weather Commitment. In the event of inclement or threatening weather, everyone should use his or her best judgment regarding travel to and from campus. Safety should be the main concern. If you cannot get to class because of adverse weather conditions, you should contact me as soon as possible. Similarly, if I am unable to reach our class location, I will notify you of any cancellation or change as soon as possible (at least one hour before class starts), using MIX to prevent you from embarking on any unnecessary travel. If you cannot get to class because of weather conditions, I will make allowances relative to required attendance policies, as well as any scheduled tests, quizzes, or other assessments.

Inclusivity. The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Accessibility Services (293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu>.

Sexual Misconduct and Resources. West Virginia University (WVU) does not tolerate sexual misconduct, including harassment, stalking, sexual assault, sexual exploitation, or relationship violence [BOG Policy 44]. It is important for you to know that there are resources available if you or someone you know needs assistance. You may speak to a member of university administration, faculty, or staff, but keep in mind that they have an obligation to report the incident to the Title IX Coordinator. If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the Carruth Center, 304-293-9355 or 304-293-4431 (24-hour hotline), and locally within the community at the Rape and Domestic Violence Information Center (RDVIC), 304-292-5100 or 304-292-4431 (24-hour hotline).