

| | | |
|-------------------------|--------------------------------|-------------------------------|
| POLS 8501 | Advanced Quant. Methods I | Fall 2019 |
| M 3:30-6:15 | Baldwin 102 | Prerequisites: POLS 7012/7014 |
| Danny Hill | Dept. of International Affairs | dwhill@uga.edu |
| Office Hrs: Tuesday 2-4 | Office: Candler 319 | |

Course Description

This course presents students with an overview of some regression-based methods widely used in political science. The emphasis of the course is on models where the traditional assumptions of ordinary least-squares regression are violated because the dependent variable is non-continuous. The course will focus on maximum likelihood estimation of various models for discrete response variables, including binary, ordered, and nominal variables, event counts, and durations. Despite the course title, the models covered are among the most widely used in political science today. It is very difficult to produce or consume quantitative research in political science without some familiarity with these models. While course readings present the models as clearly and with as little jargon as possible, much of the material in this course is technical and will require several readings to fully comprehend. Because reading books or articles and attending lectures is not sufficient to learn to perform statistical analysis, students will be required to complete lab exercises during most weeks. Special attention will be given to estimation and post-estimation analysis using the statistical software program R. Students will apply various models in a series of computer lab assignments, and to their own area of specialization in a final paper to be submitted at the end of the semester.

Required Texts

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

Monogan III, James E. 2015. *Political Analysis Using R*. Springer. **(electronic copy available for free through UGA library website)**

Ward, Michael D. and John Ahlquist. 2018. *Maximum Likelihood for Social Science*. New York: Cambridge University Press.

Supplemental Texts

Greene, William. 2018. *Econometric Analysis*. 8th ed. New York: Pearson.

Grades

Your grades will be based on lab assignments, a final paper, and class attendance/participation
Your final grade will be determined as follows:

Lab assignments (9): 40%

Final paper: 50%

Attendance/participation: 10%

Grade Distribution:

| | | |
|-----------|-----------------|----------|
| 90-100: A | 80-89: B | 70-79: C |
| 60-69: D | 59 and below: F | |

Lab Exercises/Homework Assignments

Students will complete 9 lab assignments throughout the semester. The assignments will require students to conduct statistical analysis using the software program R, which is open-source and completely free. We will spend a lot of time in class going through example code, and I will be available during office hours (and via email) to answer questions. Most assignments will be due Friday by 5 p.m. the week they are assigned.

Final Project

For your final project, you are expected to write a paper that you could present (without embarrassment) at a professional conference. The paper can be on any topic in political science but must include a *complete* analysis using one of the techniques covered in this course. This means your research question must be amenable to off-the-shelf data (that you could download right now), assuming you have not collected relevant data yourself before the course begins. For this project you are strongly encouraged to extend/finish seminar papers or other projects you have already begun. You may also use a paper you are writing for another seminar in which you are currently enrolled, if that is feasible. All analysis must be conducted in R, and students must submit replication files (a script and data file at minimum) along with their papers. Final projects are due December 6 by 5 p.m.

Course Website and Email

Can be accessed through www.elc.uga.edu. You will need to check this site regularly for any syllabus updates or for posted readings. Announcements may also be sent out via email. It is your responsibility to check ELC for syllabus updates.

Syllabus Change Policy

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

Students with Disabilities

Students with disabilities who require reasonable accommodations in order to participate in course activities or meet course requirements should contact the instructor or designate during regular office hours or by appointment.

University Honor Code/Academic Honesty Policy

As a University of Georgia student, you have agreed to abide by the University's academic honesty policy, "A Culture of Honesty," and the Student Honor Code. All academic work must meet the standards described in "A Culture of Honesty" found at www.uga.edu/honesty. Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. Questions related to course assignments and the academic honesty policy should be directed to the instructor.

Withdrawal Policy

Students who withdraw from the class before the withdrawal deadline are assigned a grade based on their performance (pass/fail) in the class up the point of withdrawal. This means that students who are failing will be assigned a "WF" grade even if they withdraw before the deadline. Students who withdraw from the class after the withdrawal deadline are automatically assigned a "WF" grade upon withdrawal.

Reading Schedule

Week 1

Aug 19: Course overview and introduction to R. Monogan, ch. 1-2. See also notes from his short course on R, available at: https://spia.uga.edu/faculty_pages/monogan/computing/r/fullR.pdf

Lab 1 due Friday.

Week 2

Aug 26: Linear model review. Long, p. 1–25.

Monogan, ch. 3, 6.

Lab 2 due Friday.

Week 3

Sep 2: Labor day, no class

Week 4

Sep 9: Maximum likelihood estimation. Ward and Ahlquist, ch. 1–2.

Long, p. 25-33, ch. 4.

Lab 3 due Friday.

Week 5

Sep 16: Models for binary responses I. Ward and Ahlquist, ch. 3.

Long, ch. 3.

Week 6

Sep 23: Models for binary responses II. Ward and Ahlquist, ch. 6–7.

Monogan, ch. 7.1.

Lab 4 due Friday.

Week 7

Sep 30: Models for ordered responses I. Ward and Ahlquist, ch. 8.

Long, ch. 5.

Monogan, ch. 7.2.

Week 8

Oct 7: Models for ordered responses II.

Lab 5 due Friday.

Week 9

Oct 14: Models for nominal (unordered) responses. Ward and Ahlquist, ch. 9.

Long, ch. 6.

Lab 6 due Monday, Oct 21.

Week 10

Oct 21: No class, Lab 6 due

Week 11

Oct 28: Models for event counts.

Ward and Ahlquist, ch. 10.

Long, ch. 8.

Monogan, ch. 7.3.

Week 12

Nov 4: Models for event counts II.

Lab 7 due Friday.

Week 13

Nov 11: Models for durations.

Ward and Ahlquist, ch. 11.

Week 14

Nov 18: Models for durations II.

Lab 8 due Friday.

Week 15

Nov 25: Model fit, validation, and forecasting. Ward and Ahlquist, ch. 5.

Ward, Greenhill, and Bakke. 2010. "The Perils of Policy by p-value." *Journal of Peace Research* 47(4): 363–375

Lab 9 due Monday, Dec 2.

Week 16

Dec 2: Analyzing data with dependencies. Green, Kim, and Yoon. 2001. "Dirty Pool." *International Organization* 55(2): 441–468

Clark and Linzer. 2015. "Should I Use Fixed or Random Effects?" *Political Science Research and Methods* 3(2): 399-408

Monogan, ch. 8.1.

Lab 9 due.

FINAL PAPER DUE: Friday, Dec 6, 5 p.m.