

**POLI 7963:
Seminar in Advanced Quantitative Analysis**

Spring 2021

**James C. Garand
Emogene Pliner Distinguished Professor**

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Introduction

The purpose of this course is to introduce graduate students to the theory, method, and practice of regression analysis and its many variants. Regression analysis is the principle method of empirical inquiry in the social sciences. It is a powerful tool for testing models of political and social phenomena and making inferences about the empirical world. Most other techniques can be understood in terms of how they relate to regression analysis. As such, it is important for advanced students in the social sciences to be well grounded in regression analysis, including its core assumptions, the implications of violations of those assumptions, and corrective actions that can be taken when regression assumptions are not met.

The seminar will proceed as follows. First, we will spend several weeks discussing the basic bivariate and multivariate regression model. Here we will focus on the general logic underlying regression analysis, as well as the assumptions upon which it is built. Second, we will discuss the implications of those assumptions for model estimation and the quality of inferences drawn from regression analyses. In particular, what problems arise when one or more regression assumptions are violated or relaxed? Third, we will spend the bulk of the semester on various techniques used to diagnose and correct for violations of regression assumptions. Finally, as time permits we will explore a range of specialized methods related to regression, including logit and probit models, time-series analysis, non-recursive models, factor analysis, and pooled cross-sectional time-series analysis.

Prerequisites

All students enrolled in this course should have completed (or be in the process of) statistics, sampling distributions, and statistical inference.

Course Requirements and Evaluation

Each student will be evaluated on the basis of the following:

Midterm Examination	100
Final Examination	100
Short research paper	100
Total	300

1. **Midterm Examination.** A comprehensive midterm examination covering all material from the first half of the course will be required for all students. Information pertaining to the format of the midterm examination will be provided to all students prior to the exam.
2. **Final Examination.** A comprehensive final examination covering all material from the second half of the course will be required for all students. Information pertaining to the format of the final examination will be provided to all students prior to the exam.
3. **Short Research Paper.** In addition to the midterm and final exams, each student will be required to write a short research paper that utilizes OLS regression analysis. More detailed information about the paper will be provided later in the semester.

The grading scale for the course is as follows:

A+	97.5% - 100%
A	92.5% - 97.5%
A-	89.5% - 92.5%
B+	87.5% - 89.5%
B	82.5% - 87.5%
B-	79.5% - 82.5%
C+	77.5% - 89.5%
C	72.5% - 77.5%
C-	69.5% - 72.5%
D+	67.5% - 69.5%
D	62.5% - 67.5%
D-	59.5% - 62.5%
F	Below 59.5%

Required Reading

There is no required text for this course. There will be some required and recommended reading during the course, primarily scholarly journal articles or other research papers. In addition, I will provide a full set of class notes and course assignments. Course readings, class notes, course assignments, and other materials will be made available through Moodle and/or by email.

Computer Statistics Package

In addition, I would like to direct you to the following web sites that are designed to assist Stata users. These are very useful web sites that provide detailed information about Stata commands. You should bookmark these web sites and refer to them often.

The first is a broad-based Stata web site housed at UCLA. One can find a wide range of information about Stata on this web site. I would encourage you to take a look at the links on this web site and familiarize yourself with what this site has to offer:

<https://stats.idre.ucla.edu/stata/>

Here is another UCLA site that has basic “learning modules” for Stata procedures.

<https://stats.idre.ucla.edu/stata/modules/>

Another introductory web site is found on the University of North Carolina web site:

<http://www.cpc.unc.edu/research/tools/da>

Academic Misconduct Statement

Academic misconduct is defined by the Code of Student Conduct. You are encouraged to familiarize yourself with the LSU policy on academic misconduct, particularly regarding plagiarism. The LSU Code of Student Conduct can be found on the web site for the LSU Dean of Students:

<https://www.lsu.edu/saa/students/codeofconduct.php>

Please read the section labelled "10.0 Misconduct." Academic misconduct is a serious violation of university policy, but more importantly it is a significant scholarly violation for political scientists. Plagiarism and other fo

About the Instructor

James C. Garand (Ph.D., University of Kentucky, 1984) is the Emogene Pliner Distinguished Professor of Political Science at Louisiana State University.

Professor Garand has teaching and research interests in the fields of electoral politics, public opinion, legislative politics, public policy, state politics, racial and ethnic politics, domestic political economy, and research methodology and statistics. His research on a wide range of topics in American politics has been published in numerous journals, including the *American Political Science Review*, *American Journal of Political Science*, *Journal of Politics*, *British Journal of Political Science*, *Political Research Quarterly*, *Western Political Quarterly*, *Comparative Political Studies*, *Legislative Studies Quarterly*, *PS: Political Science and Politics*, *Political Behavior*, *American Politics Research*, *American Politics Quarterly*, *Public Choice*, *Social Science Quarterly*, *Electoral Studies*, and *Journal for the Scientific Study of Religion*, among others. His coedited book, *Before the Vote: Forecasting American National Elections*, was published by Sage Publications in 2000.

Professor Garand received the 2006 LSU Distinguished Research Master Award in recognition of outstanding faculty accomplishments in research and scholarship. In 2009 he was recognized as an LSU "Rainmaker," an award given by the LSU Office of Research and Economic Development (ORED) for national and international recognition "for innovative research and creative scholarship." He served as President of the Southern Political Science Association in 2004, and he is also former president of the State Politics Section of the American Political Science Association. He served as Vice-President and Program Chair in 2001 for the Southern Political Science Association. Professor Garand is former editor of the *American Politics Quarterly*, one of the leading subfield journals in American politics. He currently serves on the editorial boards of *American Politics Research* and *Journal of Political Marketing*, and he is a former member of the editorial boards of the *American Journal of Political Science*, *Journal of Politics*, *State Politics and Policy Quarterly*, *PS: Political Science and Politics*, and *Legislative Studies Quarterly* and the *Ralph Bunche Journal of Public Affairs*. He also serves as a member of the International Advisory Board of the *Online Portal for Social Science Education in Methodology* (OPOSSEM).

Professor Garand has received numerous faculty awards. In 1997 Professor Garand received the LSU Alumni Association Distinguished Faculty Award in recognition of sustained excellence in teaching, research, and service. In 2012 he received the Tiger Athletic Foundation Undergraduate Teaching Award recognizing excellence in teaching in the LSU Honors College. In 2001 he received the LSU Foundation Distinguished Faculty Award in recognition of his excellence in graduate teaching, and he is the 1990 recipient of the university-wide Student Government Association Teaching Excellence Award for undergraduate teaching. He is also a recipient of the Alpha Lambda Delta Freshman Honor Society certificate of recognition for superior instruction of freshman students during the Fall 2000 semester.

Professor Garand's doctoral students have had considerable success, earning faculty appointments at the University of Maryland, University of Alabama (2), University of Florida, Wake Forest University, and other institutions.

Class Outline (continued):

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March	30-31	Regression assumptions: Heteroskedasticity
April	6-7	Regression assumptions: Autocorrelated errors
April	13-14	

POLI 7963 (Tuesday / Wednesday 4:30 – 7:20)

January	11-12	Introduction / Statistics review
	18-19	Bivariate regression models / Introduction to Stata
	25-26	Bivariate regression models (continued)
February	2	