

POP77003/77051 — Applied Statistical Analysis I

Module Information	
Module Code	POP77003 / POP77051
Module Title	Applied Statistical Analysis I/Quantitative Methods I
Department	Political Science
Module Personnel	Jeffrey Ziegler
Academic Year	2026-27
Credit Weighting	10 credits
Semester	Semester 1
Contact Hours	

Module Content	
Module Description	This is the first course in the quantitative methods sequence, which introduces the linear regression model as a fundamental tool in applied statistical analysis. Students will apply concepts of statistical analysis, specifically multi-variable analysis and model building, to a broad set of real-world data and problems from the social sciences. We will cover the assumptions that underlie the linear regression model, including issues of estimation and inference, as well as methods used to diagnose and correct for violations of those assumptions. My expectation is that at the end of the semester you will be savvy readers of published research and tasteful users of linear models. Labs, problem sets, and exams will teach students to apply concepts from class toward programming skills in R, LaTeX and GitHub, which are standard practice in academics and industry. We will cover topics such as: • examining and transforming data • linear regression • dummy variable regression • diagnostics of unusual and influential data • non-constant variance, non-normality, & collinearity • model selection

Module Content	
Module Learning Aims	<i>The broad aims of the module (optional)</i>
Learning Outcomes	<i>List the key learning outcomes</i>
Indicative Reading / Resources	Readings: This is a list of interesting and pertinent books that will be used during the course. You need to consult them occasionally, but you do not need to purchase them. I will provide the assigned readings in PDF format on the course website. • Angresti, Alan and Barbara Finlay (2009). Statistical Methods for the Social Sciences. Fourth Edition. • Chatterjee, Samprit and Ali S. Hadi (2012). Regression Analysis by Example. 5th edition. • Cunningham, Scott (2020). Causal Inference: The Mixtape. 1st Edition. • Fox, John (2015). Applied Regression Analysis and Generalized Linear Models. 3rd edition. • Hosmer, David W., Stanley Lemeshow, and Rodney X. Sturdivant (2013). Applied Logistic Regression. 3rd edition. • Imai, Kosuke (2017). Quantitative Social Science: Introduction. 1st edition. • James, Gareth, Daniela Witten, Trevor Hastie, and Robert Tibshirani (2013). An Introduction to Statistical Learning with Applications in R. 1st edition. • Kmenta, Jan (1986). Elements of Econometrics. University of Michigan.

Assessment	
Assessment Components	Problem Sets 50%, Mid-Term Exam 25%, End of Term 25%, Reassessment Examination 100%
Assessment Details	<i>Any additional information about assessment</i>

Additional Information	
Prerequisites	None
Co-requisites	POP77004
Any other information	N/A

