

# Quantitative Methods for Social Sciences - 12-Week Syllabus

## Week 1: Introduction & Foundations of Quantitative Social Science

- Role of quantitative methods in social sciences
- Measurement, variables, and data types
- Overview of Python and R environments
- Ethical considerations in quantitative research

Readings:

- King, Keohane & Verba (1994), *Designing Social Inquiry*, Chapters 1-2
- Shadish, Cook & Campbell (2002), *Experimental and Quasi-Experimental Designs*, Chapter 1
- Gelman et al. (2013), *Bayesian Data Analysis*, Introduction (optional)

## Week 2: Descriptive Statistics & Data Visualization

- Central tendency, variability, distributions
- Data summarization techniques
- Visualizing data: histograms, boxplots, scatterplots
- Introduction to data wrangling in Python (pandas) and R (dplyr)

Readings:

- Tufte (2001), *The Visual Display of Quantitative Information*, Chapters 1-3
- Gelman et al. (2013), *Bayesian Data Analysis*, Chapters 1-2
- Python pandas documentation (selected sections)
- R for Data Science (Wickham & Grolemund), Chapters on data visualization (optional)

## Week 3: Bibliography & Resources

1. Angrist, J.D., & Pischke, J.-S. (2009). *Mostly Harmless Econometrics: An Empiricist's Companion*.

DOI: <https://doi.org/10.1515/9781400829820>

Link: [https://scholar.harvard.edu/files/angrist/files/mostly\\_harmless\\_econometrics.pdf](https://scholar.harvard.edu/files/angrist/files/mostly_harmless_econometrics.pdf)

2. Gelman, A., et al. (2013). *Bayesian Data Analysis* (3rd ed.).

DOI: <https://doi.org/10.1201/b16018>

Link: <http://www.stat.columbia.edu/~gelman/book/>

3. King, G., Keohane, R.O., & Verba, S. (1994). *Designing Social Inquiry*.

Link: <https://www.cambridge.org/core/books/designing-social-inquiry/BB7F0BFE56D0D6EB971F9393C31C1E0B>