

COURSE SYLLABUS

METHODS AND RESEARCH DESIGN

Instructor:

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2 Credits (4 ECTS Credits)

Course Objectives:

This is an introductory course that aims to familiarize students with the basics of research design and quantitative (large-N) analysis. This involves analyzing and evaluating statistical data with a view toward addressing contemporary social science questions. For those who do not intend to use statistics in their own research, this course is also useful for people who desire a basic literacy so that they can read books and articles that utilize statistical techniques. The first several sessions will cover the basics of theory and research design, including how to (1) identify a viable research question; (2) formulate a theory and derive hypotheses; and (3) conceptualize and measure variables. One seminar will be devoted to an overview of qualitative (small-N) methods. The remainder of the course will cover the fundamentals of statistical analysis in order to give students an understanding of how statistics can be used in connection with political research. Four of the sessions will be held in a computer lab, where students will practice working with and analyzing an actual dataset using SPSS (Statistical Package for the Social Sciences) software for Windows. By the end of the course, students should be able to distinguish between theories and hypotheses; analyze and interpret statistical results; present data in graphical form; and perform basic statistical analysis using SPSS.

Course Books:

- Joseph F. Healey, *Statistics—A Tool for Social Research* (Belmont, CA: Wadsworth Publishing, 1996).
- Jane Fielding and Nigel Gilbert, *Understanding Social Statistics*, (London: Sage Publications, 2000).
- Stephen Van Evera, *Guide to Methods for Students of Political Research* (Ithaca, NY: Cornell University Press, 1997).
- Zina O’Leary, *The Essential Guide to Doing Research* (London, Thousand Oaks, New Delhi: Sage Publications, 2004).
- Laurence F. Jones and Edward C. Olson, *Researching the Polity: A Handbook of Scope and Methods* (Cincinnati, OH: Atomic Dog Publishing, 2005).
- SPSS Instruction Manual*, Department of Statistics and Actuarial Science, University of Waterloo, September 1, 1998.

Course Requirements:

Short readings will be assigned for each class. The course grade is broken down as follows:

- (1) Problem Sets (80%). Students will be expected to complete problem sets every week, which involve simple numeric computations and (in some cases) very short essays. Students are asked to show their work in these assignments—partial credit will be given to incorrect answers if the basic work is correct. Please note that it is important to do your own work: there are strict penalties for copying problem sets.
- (2) Participation (20%). Students are expected to attend all seminars and actively contribute to class discussions.

COURSE SCHEDULE

Seminar 1: Research Question and Literature Review (O’Leary, pp. 28-41; 66-84)

Seminar 2: Elements of Research Design (Buttolph and Johnson, pp. 33-60)

- Hypotheses and Theories
- Independent, Intervening, Dependent Variables
- Data, Variables, Values
- Examples from International Relations

Seminar 3: Overview of Qualitative Research (Van Evera, pp. 49-70)

- Qualitative versus Quantitative Analysis
- The Comparative Method
- Congruence Procedures
- Process-tracing
- Crucial Cases

Seminar 4: The Basics of Data Analysis (Healey, pp. 7-9; Jones and Olson, pp. 181-194)

- Descriptive v. Inferential Data Analysis
- Measuring Variables (validity, reliability, replicability)
- Types of Variables (nominal, ordinal, interval)
- Common Terms (dataset, population sample, parameter, statistic)
- Misuses of Data (examples)

Seminar 5: Univariate (Descriptive) Statistics (Jones and Olson, pp. 247-267)

- Sample Size (N)
- Range
- Frequency Distributions
- Histograms
- Other Charts
- Measures of Central Tendency and Dispersion
 - Means, medians, modes
 - Variance, standard deviation

Seminar 6 (LAB): Introduction to SPSS for Windows (Jones and Olson Workbook, pp. 1-9, 139-148)

- Starting an SPSS Session
- Creating a New Dataset
- Using an Existing Dataset
- Manipulating and Merging Datasets
- Importing and Exporting Data
- Printing Datasets
- Descriptive Statistics in SPSS (mean, standard deviation, variance, range, frequencies)

Seminar 7 (LAB): Manipulating Data in SPSS (Jones and Olson Workbook, pp. 11-17)

- Recoding and Transforming Variables
- Graphs and Charts
 - Scatterplots
 - Histograms
 - Box Plots and Other Charts
 - Cross-tabulations
- Printing and Saving Output

Seminar 8: Probabilities and Sampling (Healey, pp. 116-124; 138-147)

- Binomial and Normal Random Variables
- The Meaning of “Normal”
- Z-scores
- Using the Normal Table
- Other distributions
- Methods of Sampling
 - Systematic Sampling
 - Random Sampling
- Sampling Error

Seminar 9: Hypothesis-testing (Healey, pp.152-168; 173-195)

- Confidence Intervals
- Estimation Procedures
- Null and Alternative Hypotheses
- One and Two-Tailed Tests

Seminar 10: Bivariate Correlation and Regression (Fielding and Gilbert, pp. 161-182)

- Introduction to Bivariate Analysis
- Covariance and the Correlation Coefficient
- Graphing the Function
- Regression and the Method of Ordinary Least Squares (OLS)
- Interpreting Regression Statistics (Beta Coefficient and R-Squared)

Seminar 11 (LAB): Bivariate Regression Analysis in SPSS (Fielding and Gilbert, pp. 182-197)

- Correlations
- Bivariate Regression Analysis
- Interpreting the Statistics
- Presenting the Data

Seminar 12 (LAB): Multivariate Regression Analysis in SPSS (Jones and Olson, pp. 307-321)

- Introduction to Multivariate Regression Analysis
- When to use Multivariate Regression
- Control Variables
- Goodness of Fit (R-squared statistic)
- Interpreting the Statistics