Economic, Political and Policy Sciences

**EPPS 6310** Research Design I (3 semester hours) This course is the first in a two-course sequence devoted to the research enterprise and the study of data development strategies and techniques to facilitate effective statistical analysis. Topics generally covered include: (1) issues and techniques in social science research with emphasis on philosophy of science, theory testing, and hypothesis formulation; (2) measurement and data collection strategies, reliability and validity of measures and results, sampling, surveys; and (3) examination of qualitative versus quantitative research techniques, working with observational data, field research issues, and triangulation. (3-0) Y

**EPPS 6313** Introduction to Quantitative Methods (3 semester hours) This introductory graduate-level statistics course is geared to the consumption of statistical methods commonly used in social science research. Topics include creating and interpreting graphical and tabular summaries of data, descriptive statistics, basic probability theory, sampling distributions, basic hypothesis testing (t-tests, chi-square tests, and analysis of variance), estimation of population parameters, confidence intervals and correlation. An introduction to regression analysis will also be provided. Topics are supported by computer-supported data analyses. (3-0) Y

**EPPS 6316** Applied Regression (3 semester hours) This course provides a survey of the bivariate and multiple regression models estimated using Ordinary Least Squares (OLS), with an emphasis on using regression models to test social and economic hypotheses. This application-focused course presents examples drawn from economics, political science, public policy and sociology, introduces the basic concepts and interpretation of regression models, and basic methods of inference. Topics are supported by computer-supported data analyses. Prerequisite: **EPPS 6313** or **EPPS 7313**. (3-0) Y

**EPPS 6320** Short Courses in Contemporary Social Science Research Methods (3 semester hours) This course is comprised of three short courses that each last two full days over the course of a calendar year. The classes are each intensive surveys of modern statistical methods that are used in the social sciences. Typically, these classes are taught all day on Thursday/Friday (sometimes Friday/Saturday). In order to get credit, the student must attend all three classes (six full days) over the course of the year. The class will be offered in the spring semester so the student must have attended the class or classes that were offered in the fall semester immediately prior to the semester in which the student is taking the class for credit. Taught pass/fail only. (3-0) Y

**EPPS 6324** Data Management for Social Science Research (3 credit hours) Covers the principles and practical techniques of data cleaning, data organization, quality control, and automation of research tasks. Topics covered will include data types, useful text and math functions, labeling, recoding, data documentation, merging datasets, reshaping, and programming structures such as macros, loops, and branching using Stata and R. The course will also discuss using LaTeX to automate outputting of results and graphics in publishable formats. Prerequisite: **EPPS 6313** or **EPPS 7313** or permission of instructor. (3-0) R

**EPPS 6342** Research Design II (3 semester hours) This course is the second in a two-course sequence devoted to the study of data development strategies and techniques to facilitate effective statistical
analysis. Topics generally covered include: the logic of causal inquiry and inference in the Economic, Political and Policy Sciences, the elaboration paradigm and model specification, anticipating and handling threats to internal validity, hierarchies of design structure (experimental, quasi-experimental and non-experimental): linking design structure to effect estimation strategies and analyzing design elements in published literature. Students will be required to select a research topic in consultation with the instructor and prepare a written comparative design analysis. Recommended: EPPS 6310, EPPS 6316 or equivalents recommended. (3-0) Y

**EPPS 6346** Qualitative Research Methods (3 semester hours) This course provides an overview of qualitative research in the Economic, Political and Policy Sciences. Students will investigate the assumptions underlying qualitative research approaches and critically assess the strengths and weaknesses of such approaches. Possible topics may include participant observation, ethnomethodology, conversation analysis, case study, and the analysis of historical documents. (3-0) T

**EPPS 6352** Evaluation Research Methods in the Economic, Political and Policy Sciences (3 semester hours) A review of research methods used in program evaluation, with an emphasis on public and nonprofit social programs. Issues to be addressed include research design, appropriate performance standards, measurement and selection of individuals, sampling, data collection, and data analysis. (3-0) Y

**EPPS 7304** Cost-Benefit Analysis (3 semester hours) Examines methods for measuring costs and benefits of public projects and policies, and the application of cost-benefit analysis to areas such as economic development, water resources, recreation, transportation, regulation, and the environment. (3-0) R

**EPPS 7313** Descriptive and Inferential Statistics (3 semester hours) The course provides a thorough introduction to probability and statistics. Probability topics covered include random variables, expectations, and probability distributions. The heart of the course is a rigorous introduction to statistical inference: sampling theory, confidence intervals, and hypothesis tests. The final section of the course is an introduction to regression analysis, with an emphasis on interpretation of regression results, using examples from recent research. Recommended: one semester of calculus. (3-0) Y

**EPPS 7316** Regression and Multivariate Analysis (3 semester hours) This course provides a detailed examination of the multiple regression models estimated using Ordinary Least Squares (OLS), with an emphasis on using regression models to test social and economic hypotheses. Also covered are several special topics in regression analysis, including violations of OLS assumptions, the use of dummy variables, and fixed effects models. The course ends with an introduction to advanced topics in regression analysis, qualitative response models, and non-OLS approaches to estimation. Topics are supported by computer-supported data analyses using application-specific software. Prerequisite: EPPS 7313. (3-0) Y

**EPPS 7318** Structural Equation and Multilevel (Hierarchical) Modeling (3 semester hours) An introduction to structural equation modeling (SEM) and multilevel modeling (MLM), sometimes called hierarchical linear or mixed modeling. SEM represents a general approach to the statistical examination of the fit of a theoretical model to empirical data. Topics include observed variable (path) analysis, latent variable models (e.g., confirmatory factor analysis), and latent variable SEM analyses. MLM represents a general approach to handling data that are nested within each other or have random components. Topics include dealing with two-level data that may be cross-sectional, such as students within classes, or longitudinal, such as repeated observations on individuals, firms or countries. Recommended: EPPS 7316 or equivalent.

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Prerequisite: **ECON 6306** or **ECON 6309** or **EPPS 6316** or permission of instructor. (3-0) R

**EPPS 7344** Categorical and Limited Dependent Variables (3 semester hours) This course examines several types of advanced regression models that are frequently used in policy analysis and social science research. The key similarity of these models is that they involve dependent variables that violate one or more of the assumptions of the Ordinary Least Squares (OLS) regression model. The main models examined in the course are binary logit and probit, multinomial logit, ordinal probit, tobit, and the family of Poisson regression models. All these models are estimated using maximum likelihood estimation (MLE). The Heckman correction for selection is also addressed. Recommended: **EPPS 6316** or the equivalent. (3-0) R

**EPPS 7368** Spatial Epidemiology (3 semester hours) Examines the conceptual and analytic tools used to understand how spatial distributions of exposure impact processes and patterns of disease. Emphasizes the special design, measurement, and analysis issues associated with spatial patterns of diseases. Contemporary diseases of public health importance are addressed, and the statistical and inferential skills are provided that can be used in understanding how spatial patterns arise and their implications for intervention. Prerequisite: **EPPS 6313** or equivalent. (3-0) R

**EPPS 7370** Time Series Analysis (3 semester hours) The course considers several important topics in applied time series analysis including the specification and testing Box-Jenkins models and dynamic regressions. Other topics may include forecasting, vector autoregression models, unit root inference, cointegration, autoregressive conditional heterogeneity, Bayesian time series, and regime switching models. Students also learn how to use modern time series software. Recommended: **EPPS 7316** or equivalent. (3-0) R

**EPPS 7386** Survey Research (3 semester hours) This course exposes students to the use of survey methods in social science research. Emphasis is placed on interview and questionnaire techniques and the construction and sequencing of survey questions. Attention is also devoted to sampling theory, sampling and non-sampling errors, and the use of recent advances in fieldwork to reduce measurement error in surveys. Recommended: **EPPS 6313** or equivalent. (3-0) R

**EPPS 7390** Bayesian Analysis for Social and Behavioral Sciences (3 semester hours) This course covers the theory and application of Bayesian statistics for economic, political, and other social science data. Students will learn how maximum likelihood and Bayesian estimation are related and how the latter is used to develop decision based inference. Topics include subjective probability, general linear models, posterior simulation methods, model specification and averaging, and sensitivity analysis. Prerequisite: **EPPS 7316** or equivalent. (3-0) R

**EPPS 7v81** Special Topics in Social Science Research Methodology (1-9 semester hours) May be repeated for credit as topics vary (9 hours maximum). (3-0) R

**EPPS 7v88** Workshop in Teaching Effectiveness (1-3 semester hours) Workshop will focus on preparing students for positions as teaching assistants, lecturers, and those who expect to teach as a career in the social sciences. Emphasis will be placed on videotaped student presentations and feedback, guest presentations, student visits to EPPS faculty classes. May be repeated for credit (3 hours maximum). ([1-3]-0) R

**EPPS 8v95** Frontiers of Social Science Research Methods (1-6 semester hours) Students working on
dissertations or research papers receive feedback and advice on research methods, the discussion of methods in their writing, and presentation of results. (3-0) R