Quantitative Methods

Math and Stats Department

STAT 577 / 477. Introduction to Bayesian Modeling. (3)

An introduction to Bayesian methodology and applications. Topics covered include: probability review, Bayes’ theorem, prior elicitation, Markov chain Monte Carlo techniques. The free software programs WinBUGS and R will be used for data analysis.

Prerequisite: 561 and (527 or 540).

{Alternate Springs}

STAT 547. Multivariate Analysis and Advanced Linear Models. (3)

Hotelling T2, multivariate ANOVA and Regression, classification and discrimination, principal components and factor analysis, clustering, graphical and computational techniques, topics in linear models.

Prerequisite: 546.

{Alternate Springs}

STAT 545 / 445. Analysis of Variance and Experimental Design. (3)


Prerequisite: 540.

{Spring}

STAT 540 / 440. Regression Analysis. (3)


Prerequisite: 527.

{Fall}

STAT 481 / 581. Introduction to Time Series Analysis. (3)

Introduction to time domain and frequency domain models of time series. Data analysis with emphasis on Box-Jenkins methods. Topics such as multivariate models; linear filters; linear prediction; forecasting and control.

Prerequisite: 461.
Educational Psychology

**EDPY 604. Multiple Regression Techniques as Applied to Education (3)**

Includes bivariate regression, multiple regression with continuous and categorical independent variables and interactions, orthogonal and nonorthogonal designs and selected post hoc analyses. Computer analysis, conceptual understanding and applications to educational research are stressed.

Prerequisite: 603.

**EDPY 606. Applied Multivariate Statistics (3)**

Advanced statistical techniques including discriminant function analysis, multivariate analysis of variance, canonical correlation, principal components analysis and exploratory factor analysis. Emphasis on conceptual understanding and use and interpretation of computer software.

**EDPY 608. Multilevel Modeling (3)**

The fundamentals of multilevel regression models, applications of such models to both cross-sectional and longitudinal data, and a survey of several advanced multilevel regression models.

Prerequisite: 604.

Nursing

**NURS 615. Critical Ethnography and CBPR in Health Care Research (3)**

Examines conceptual/philosophical traditions, foundations, characteristics, procedures, applications and contexts for health care research involving critical ethnographic and CBPR methods. Focuses on strategies for designing and implementing studies in multicultural settings and diverse populations.

Prerequisite: 607.

**NURS 621. Health Care Statistics II [Advanced Health Care Statistics II] (3)**

Provides knowledge, skills and practice analyzing and interpreting quantitative data using multivariate statistical techniques, including: multiple linear and logistic regression, factorial analysis of variance and covariance, and exploratory factor analysis.

Prerequisite: 620.

Political Science

**POLS 581. Statistics for Social Research (4)**

Provides intensive experience and lab instruction in quantitative techniques employed in political science research, including descriptive statistics, statistical inference, hypothesis testing, measures of central tendency, crosstabulation, differences between means, bivariate regression, correlation and multivariate analysis. Required of M.A. and Ph.D. students.
Psychology

**PSY 601. Multivariate Statistics (3)**

Course provides overview of multivariate (MV) methods often used in psychology: data screening; multiple regression, MANOVA, MANCOVA, discriminant analysis, exploratory factor analysis, multiway frequency logistic models; brief introductions to structural equation models and multi-level models.

Sociology

**SOC 581. Advanced Social Statistics I (3)**

Soller, Thomas

Examines theory (assumptions, properties of estimators) and application of multiple regression. Introduces matrix notation and generalized least squares.

Prerequisite: 481L.

**SOC 582. Advanced Social Statistics II (3)**

Thomas

Additional methods for quantitative social research: regression diagnostics, logit and Poisson regression, principal components, correspondence analysis.

Prerequisite: 581.

**SOC 583. Special Topics in Advanced Social Statistics (3)**

Soller, Thomas

A close examination of the properties and application of a single quantitative method (or a few related methods). Possible topics include structural equation models, log linear models, dynamic models, scaling.

Prerequisite: 582.

Qualitative Methods

Communication and Journalism

**CJ 604. Qualitative Research Methods I (3)**

Introduction to history, assumptions, logic, and methods of qualitative inquiry, with emphasis on field methods of data collection such as observation, interviewing, focus group, etc. Focus on research design, human subject protection, and data analysis.

**CJ 605. Qualitative Research Methods II (3)**
Approaches and techniques for the analysis of qualitative data such as texts, talk, and ethnographic. Explores the relationship between paradigm, theory, method, and interpretation as students practice various analytical strategies.

Prerequisite: 604 for M.A. students.

Educational Leadership

**LEAD 605. Leader as Researcher (3)**
(Also offered as LLSS 605)

A doctoral seminar focusing on qualitative research methods, including problem definition, data collection and analysis and increasing the trustworthiness of one’s findings. A research study is required.

Prerequisite: LLSS 523 or EDPY 511.

Restriction: admitted to Ed.D. cohort.

Language, Literacy, and Sociocultural Studies

**LLSS 605. Advanced Qualitative Research Methods (3)**
(Also offered as LEAD 605)

A doctoral seminar focusing on helping students understand qualitative research methods, including: problem definition, data collection and analysis and how to increase the trustworthiness of one’s findings. A research study is required.

Prerequisite: 502

**LLSS 623. Ethnographic Research (3)**

Seminar designed to engage students in the philosophy and methods of ethnographic research. Includes finding an appropriate cultural scene, conducting the actual fieldwork, analyzing the data and writing up the study.

Prerequisite: 605.

Anthropology

**ANTH 541. Problems and Practice in Ethnography (3)**

A practicum in ethnographic methods and theory.

Sociology

**SOC 585. Sociological Fieldwork Methods: Ethnography, Interviews, Focus Groups (3)**

Intensive practicum on research fieldwork, including research design, human subjects review, the ethics/politics of fieldwork, and fieldwork implementation. Focuses on ethnographic and interview methods; some attention to focus groups and archives.

Prerequisite: 580