Sample Statistics Courses offered in the College of Education

Note: Similar core statistics classes are also offered in the EDA and EDC (C&I/STEM) departments. Only EDP department statistics courses are listed here. Please contact your graduate advisor to find out details about other course offerings. In addition, there are several other higher level statistics courses offered on campus by other departments.

EDP Statistics Courses

EDP 380E
Topic 1: Fundamental Statistics: Topics include descriptive and inferential statistics; sampling distributions; hypothesis testing; correlation; linear prediction; tests of mean differences; tests of frequencies and proportions; and one-way analysis of variance.

EDP 382K or some require 482K. Quantitative Methods.

Topic 1: Experimental Design and Statistical Inference. Topics include hypothesis tests and data analysis procedures for a variety of experimental designs, including one-way analysis of variance; factorial analysis of variance; analysis of covariance; and repeated measures designs. Instruction in the use of statistical software is provided. Additional prerequisite: Educational Psychology 380E Fundamentals of Statistics or passing of EDP Fundamental statistics vestibule exam.

Topic 2: Correlation and Regression Methods. Examines tests of association; multiple regression, including multiple predictors of a single interval-scaled outcome; and related topics such as regression models for mediation and moderation. Additional prerequisite: Educational Psychology 380E Fundamentals of Statistics or passing of EDP Fundamental statistics vestibule exam.

Topic 3: Factor Analysis. Exploratory and confirmatory factor analysis models; elementary matrix algebra; basic formulae for common factor analysis and principal components analysis; factor extraction methods; rotation models; criteria for analytical orthogonal and oblique rotation; interpretation of factors; calculation of factor scores; use of computer programs; and tests of model fit. Additional prerequisite: Educational Psychology 380P (Topic 2: Psychometric Theory and Methods) and Educational Psychology 382K (Topic 2: Correlation and Regression Methods); or consent of instructor.

Topic 4: Survey of Multivariate Methods. Fundamentals of vector and matrix algebra; multivariate analysis of variance; principal components analysis and exploratory factor analysis; discriminant analysis; and logistic regression. Additional prerequisite: Educational Psychology 382K (Topic 1: Experimental Design and Statistical Inference and Topic 2: Correlation and Regression Methods) or consent of instructor.

Topic 6: Structural Equation Modeling. Provides the basic theoretical background necessary for the application of structural equation modeling to research problems including model specification, identification, path analysis, estimation, testing fit, respecification, confirmatory factor analysis, and issues concerning the interpretation of structural equation models. Additional
prerequisite: Educational Psychology 382K (Topic 4: Survey of Multivariate Methods) or consent of instructor.

**Topic 9: Advanced Statistical Modeling.** Advanced course intended for doctoral students specializing in quantitative methods. Topics vary but may include extensions of basic two- and three-level multilevel models and of structural equation models; simulation study design; and related topics. Additional prerequisite: Educational Psychology 382K (Topic 6: Structural Equation Modeling) and 384 (Topic 16: Hierarchical Linear Modeling); or consent of instructor.

**Topic 10: Applied Bayesian Analysis.** Practical introduction to Bayesian statistical inference with an emphasis on applications in behavioral and measurement research. Subjects include the conceptual differences between Bayesian and classical statistical inference and the differences between these approaches in the context of statistical procedures. Additional prerequisite: Educational Psychology 382K (Topic 1: Experimental Design and Statistical Inference and Topic 2: Correlation and Regression Methods) or consent of instructor.

**EDP 384. Research Methodology.**

**Topic 6: Data Analysis Using SAS.** Creating and modifying Statistical Analysis Systems (SAS) data sets using Data Step programming; managing a system of SAS data sets; and invoking SAS procedures using the PROC Step. Additional prerequisite: Educational Psychology 482K (Topic 1: Experimental Design and Statistical Inference) or consent of instructor.

**Topic 7: Meta-analysis.** Effect size calculation for different designs; quantitative methods and models for synthesizing and testing moderators of effect size; and related subject matter. Additional prerequisite: Educational Psychology 382K (Topic 1: Experimental Design and Statistical Inference and Topic 2: Correlation and Regression Methods) or consent of instructor.

**Topic 16: Hierarchical Linear Modeling.** Introduction to the basic concepts and applications of hierarchical linear models. Topics include applications in contextual analysis, growth curve modeling, meta-analysis, and multilevel models for dichotomous outcomes. Additional prerequisite: Educational Psychology 382K (Topic 2: Correlation and Regression Methods) or consent of instructor.