SMITH COLLEGE

MTH245 Introduction to the Practice of Statistics (offered every semester)

An application-oriented introduction to modern statistical inference: study design, descriptive statistics, random variables, probability and sampling distributions, point and interval estimates, hypothesis tests, resampling procedures, and multiple regression. A wide variety of applications from the natural and social sciences will be used. Classes meet for lecture/discussion and for a required laboratory that emphasizes analysis of real data. MTH 245 satisfies the basis requirement for Biological Science, Engineering, Environmental Science, Neuroscience, and Psychology. Normally, students will receive credit for only one of the following introductory statistics courses: MTH 190/PSY 190, ECO 220, GOV 190, MTH 241, MTH 245 or SOC 201. Exceptions may be allowed in special circumstances and require permission of the adviser and the instructor. Prerequisite: MTH 111, or MTH 153, or one year of high school calculus, or permission of the instructor.

MTH247 Introduction to Regression Analysis (offered fall of every even numbered year)

Theory and applications of regression techniques; linear and non linear multiple regression models, residual and influence analysis, correlation, covariance analysis, indicator variables, and time series analysis.
This course includes methods for choosing, fitting, evaluating, and comparing statistical models and analyzes data sets taken from the natural, physical, and social sciences. Prerequisite: one of the following: MTH 190, MTH 241, MTH 245, ECO 220, GOV 190, PSY 190 or a score of 4 or 5 on the AP Statistics examination.

MTH 290/PSY 290 Research Design and Analysis (offered every fall)

A survey of statistical methods needed for scientific research, including planning data collection and data analyses that will provide evidence about a research hypothesis. The course can include coverage of analyses of variance, interactions, contrasts, multiple comparisons, multiple regression, factor analysis, causal inference for observational and randomized studies and graphical methods for displaying data. Special attention is given to analysis of data from student projects such as theses and special studies. Statistical software will be used for data analysis. Prerequisites: One of the following: PSY190/MTH 190, MTH 245 or a score of 4 or 5 on the AP Statistics examination or the equivalent.

MTH346 Seminar: Mathematical Statistics (offered spring of odd numbered years, alternates with Mount Holyoke College)

An introduction to the mathematical theory of statistics and to the application of that theory to the real world. Topics include random variables, special distributions, introduction to the estimation of parameters and hypothesis testing. Prerequisites: MTH 212 and MTH 246.