STATISTICS (STAT)

STAT 530   Applied Regression Analysis   3 Credit Hours
Topics include single variable linear regression, multiple linear regression and polynomial regression. Model checking techniques based on analysis of residuals will be emphasized. Remedies to model inadequacies such as transformation will be covered. Basic time series analysis and forecasting using moving averages and autoregressive models with prediction errors are covered. Additional assignments in logistic regression and forecasting will distinguish this course from its undergraduate version, STAT 430. Statistical packages will be used. Students cannot receive credit for both STAT 430 and STAT 530.
Prerequisite(s): STAT 425 or STAT 325 or IMSE 317
Restriction(s):
Can enroll if Level is Rackham or Graduate

STAT 535   Data Analysis and Modeling   3 Credit Hours
Linear models including models with factors associated with both fixed and random effects together with covariates. Models containing more complex covariance structure including repeated measures and time dependence. The statistical processing package SAS will be used extensively to analyze data associated with such models. The SAS procedures Proc GLM, Proc REG, and Proc Mixed will be used extensively in examples, assignments, and projects. (OC).
Restriction(s):
Can enroll if Class is Graduate

STAT 545   Reliability & Survival Analys   3 Credit Hours
Parametric and nonparametric modeling of reliability data from industrial experiments and survival data from biological experiments where the data may be censored. This includes models where covariates are present and where the data may be from the Weibull, log-normal, or the gamma distribution and also the nonparametric proportional hazards model and Cox regression. The statistical processing package SAS will be used extensively to analyze data associated with such models. The SAS procedure Proc LIFEREG will be used to analyze parametric regression models and the procedure Proc LIFETEST will be used to analyze nonparametric regression models in examples, assignments, and projects. (OC).
Restriction(s):
Can enroll if Class is Graduate

STAT 550   Multivariate Stat Analysis   3 Credit Hours
An introduction to commonly encountered statistical and multivariate techniques, while assuming only a limited knowledge of higher-level mathematics. Topics include: multivariate analysis of variance, multivariate regression, principal components and factor analysis, canonical correlation, and discriminant analysis.
Prerequisite(s): STAT 530

STAT 555   Environmental Statistics   3 Credit Hours
A wide variety of statistical tests important in environmental sciences will be covered through the use of case studies. Theory and applications of datasets, data displays, and formal statistical inference will be discussed. Students will obtain direct experience with the study and analysis of data, do projects, and write reports. (W, AY)
Restriction(s):
Can enroll if Class is Graduate

STAT 560   Time Series Analysis   3 Credit Hours
An-Introduction to time series, including trend effects and seasonality, while assuming only a limited knowledge of higher-level mathematics. Topics include: linear Gaussian processes, stationarity, autocovariance and autocorrelation; autoregressive (AR), moving average (MA) and mixed (ARMA) models for stationary processes; likelihood in a simple case such as AR(1); ARIMA processes, differencing, seasonal ARIMA as models for non-stationary processes; the role of sample autocorrelation, partial autocorrelation and correlograms in model choice; inference for model parameters; forecasting: dynamic linear models and the Kalman filter.
Prerequisite(s): STAT 530

STAT 590   Topics in Applied Statistics   3 Credit Hours
A course designed to offer selected topics in applied statistics. The specific topic will be announced together with the prerequisites when offered. Course may be repeated for credit when specific topic differs. (OC)
Restriction(s):
Can enroll if Level is Rackham or Graduate

STAT 597   Ind Studies in Statistics   1 to 3 Credit Hours
Independent Study in statistics for topics at the graduate level. Topics and objectives chosen bt agreement between students and instructor.

*   An asterisk denotes that a course may be taken concurrently.

Frequency of Offering

The following abbreviations are used to denote the frequency of offering: (F) fall term; (W) winter term; (S) summer term; (F, W) fall and winter terms; (YR) once a year; (AY) alternating years; (OC) offered occasionally