A ST - APPLIED STATISTICS (A ST)

A ST 251G. Statistics for Business and the Behavioral Sciences
3 Credits
Techniques for describing and analyzing data; estimation, hypothesis testing, regression and correlation; basic concepts of statistical inference. Same as STAT 251G.
Prerequisite: C- or better in MATH 120.

A ST 311. Statistical Applications
3 Credits
Techniques for describing and analyzing economic and biological data; estimation, hypothesis testing, regression and correlation; basic concepts of statistical inference.
Prerequisite(s): MATH 120.

A ST 450. Special Topics
1-4 Credits
Specific subjects and credits announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

A ST 456. Statistical Methods and Data Analysis
3 Credits
Methods for sampling and estimation; analysis of variance and elementary experimental designs; linear regression and correlation; multiple regression, variable selection methods and residual analysis; introduction to statistical packages.
Prerequisite(s): A ST 251, A ST 311, or equivalent.

A ST 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with prior approval of the department head. Maximum of 3 credits per semester and a grand total of 3 credits.

A ST 503. SAS Basics
2 Credits (1+2P)
An introduction to the statistical software package, SAS, and its utilization in an interactive computing environment, primarily PC/SAS. Provides a fundamental understanding of the structure of SAS, its data management capabilities, and how to invoke a variety of descriptive and simple statistical SAS procedures.
Corequisite(s): A ST 505, or consent of instructor.

A ST 504. Statistical Software Applications
1 Credit
Optional Computing course to accompany A ST 506. Computer analysis of topics covered in A ST 505 and A ST 506.
Prerequisite(s): A ST 503 or consent of instructor.
Corequisite(s): A ST 506.

A ST 505. Statistical Inference I
4 Credits (3+2P)
A qualitative introduction to the concepts and methods of statistical inference. Sampling, frequency distributions (z, t, x2, F), estimation, and testing. One-way analysis of variance. Simple linear regression.
Prerequisite: consent of the instructor.

A ST 506. Statistical Inference II
3 Credits (2+2P)
Introduction to multiple regression; the analysis of variance for balanced studies; multiple comparisons, contrasts, factorials, experimental designs through split plots.
Prerequisite: A ST 505 and the ability to use a standard computer package such as SAS (may be satisfied by A ST 503) or consent of instructor.

A ST 507. Advanced Regression
3 Credits
Examination of multiple regression; residual analysis, collinearity, variable selection, weighted least squares, polynomial models, and nonlinear regression: linearizable and intrinsically nonlinear models.
Prerequisite(s): A ST 503 and A ST 505 or consent of instructor.

A ST 508. Analysis of Advanced Designs and Related Topics
3 Credits
Complete and incomplete block designs; fixed, mixed, and random models; unbalanced data; analysis of covariance; nested experiments; fractional factorials.
Prerequisite(s): A ST 503 and A ST 506; or consent of instructor.

A ST 515. Statistical Analysis with R
3 Credits
Introduction to R data types, basic calculations and programming, data input and manipulation, one and two sample tests, ANOVA, regression, diagnostics, graphics, probability distributions, and basic simulations in the R software environment.
Prerequisite(s): A ST 505 or equivalent with consent of instructor.

A ST 521. Sampling Methodology
3 Credits (3+2P)
Methodology of sampling finite populations using design-based (simple random, stratified, systematic, cluster, and multistage), model-based (regression and ratio estimators), and adaptive sampling. Properties of estimators under all designs are discussed.
Prerequisite(s): Either A ST 505 or A ST 565, or consent of instructor.

A ST 522. Survey Sampling
2 Credits (3+2P)
Techniques of survey sampling (mail questionnaire and telephone surveys) applicable to social sciences. Techniques of questionnaire preparation and methods of evaluating results are presented.
Prerequisite: A ST 521, or consent of instructor.

A ST 523. Biological Sampling (s)
3 Credits
Methods of sampling biological populations: area frame, quadrant, line intercept, line transect, and mark-recapture. May be repeated up to 3 credits.
Prerequisite(s): A ST 505 or consent of instructor.

A ST 545. Time Series Analysis and Applications
3 Credits
A systematic exposition of the methods for analyzing, modeling, and forecasting time series. Emphasizes underlying ideas and methods rather than detailed mathematical derivations, using SAS, BMDP, IMSL, and Fortran. May be repeated up to 3 credits.
Prerequisite(s): A ST 503 and A ST 505, or consent of instructor.

A ST 550. Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.
A ST 551. Introduction to Statistical Consulting
1 Credit
Consideration of published material in the consulting process. Restricted to majors. Graded S/U.
Prerequisite: consent of instructor.

A ST 552. Advanced Statistical Consulting
1 Credit
Continuation of A ST 551 with emphasis on dealing with clients in order to identify statistically relevant features of a research study. Restricted to majors. Graded S/U.
Prerequisite: A ST 551.

A ST 553. Practicum in Statistical Consulting
1 Credit
Supervised experience under the guidance of senior faculty. May be repeated for a maximum of 2 credits. Restricted to majors. Graded S/U.
Prerequisite: A ST 552.

A ST 555. Applied Multivariate Analysis
3 Credits
Multivariate analysis of linear statistical models, including MANOVA and repeated measures. Analysis of correlation and covariance structures, including principal components, factor analysis, and canonical correlation. Classification and discrimination techniques.
Prerequisite(s): A ST 506 and A ST 504 or consent of instructor.

A ST 565. Statistical Analysis I
4 Credits (3+2P)
An analytic introduction to the theory and methods of statistical inference. Sampling, frequency distributions (z, t, x², F), estimation, testing, and simulation.
Prerequisite: MATH 291G or consent of instructor.

A ST 566. Statistical Analysis II
4 Credits (3+2P)
Continuation of A ST 565.
Prerequisite: A ST 565 or consent of instructor.

A ST 567. Applied Linear Models I
3 Credits
The mean model, including constraints, approach to linear models; nonidentity variance-covariance matrices. Some emphasis on computational aspects and relation to statistical packages.
Prerequisite: A ST 566 or consent of instructor.

A ST 568. Applied Linear Models II
3 Credits
The relation of full to less-than-full rank linear models; complex data structures, including messy data, empty cells, and components of variance: extensions to categorical data analysis and nonparametric methods. Continues some emphasis on computational aspects.
Prerequisite: A ST 567.

A ST 596. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with prior approval by department head. May be repeated for a maximum of 3 credits.
Prerequisite: consent of instructor.

A ST 598. Special Research Problems
1-6 Credits
Individual analytical or experimental projects. Restricted to majors. Graded S/U.

A ST 599. Master's Thesis
1-6 Credits
Thesis.