Statistics (STAT)

Courses

STAT A252 Elementary Statistics 3 Credits
Introduction to statistical reasoning. Emphasis on concepts rather than in-depth coverage of traditional statistical methods. Topics include sampling and experimentation, descriptive statistics, probability, binomial and normal distributions, estimation, single-sample and two-sample hypothesis tests. Additional topics will be selected from descriptive methods in regression and correlation, or contingency table analysis.

Special Note: A student may apply no more than 3 credits from STAT A252 or BA A273 toward the graduation requirements for a baccalaureate degree.

Registration Restrictions: If prerequisite is not satisfied, appropriate SAT, ACT, or AP scores or approved UAA placement test required.

Prerequisites: MATH A105 with a minimum grade of C or ALEKS Overall Test 1 with a score of 55 or ALEKS Overall Test 2 with a score of 55 or ALEKS Overall Test 3 with a score of 55 or ALEKS Overall Test 4 with a score of 55 or ALEKS Overall Test 5 with a score of 55.

Attributes: UAA Quantitative Skills GER.

STAT A253 Applied Statistics for the Sciences 4 Credits
Intensive survey course with applications for the sciences. Topics include descriptive statistics, probability, random variables, binomial, Poisson and normal distributions, estimation and hypothesis testing of common parameters, analysis of variance for single factor and two factors, correlation, and simple linear regression. A major statistical software package will be utilized.

Registration Restrictions: If prerequisite is not satisfied, appropriate SAT, ACT, or AP scores or approved UAA placement test required.

Prerequisites: MATH A121 with a minimum grade of C or MATH A151 with a minimum grade of C or MATH A155 with a minimum grade of C or ALEKS Overall Test 1 with a score of 65 or ALEKS Overall Test 2 with a score of 65 or ALEKS Overall Test 3 with a score of 65 or ALEKS Overall Test 4 with a score of 65 or ALEKS Overall Test 5 with a score of 65.

Attributes: UAA Quantitative Skills GER.

STAT A307 Probability and Statistics 4 Credits
A calculus-based introduction to probability and statistics with emphasis on scientific applications. Topics include probability, probability distributions for discrete and continuous random variables, joint distributions, mathematical expectation, moment generators, functions of random variables, estimation, and the study of power and significance of hypothesis tests.

Prerequisites: MATH A221 with a minimum grade of C or MATH A252 with a minimum grade of C.

Attributes: UAA Quantitative Skills GER.

STAT A308 Intermediate Statistics for the Sciences 3 Credits
Introduction to statistical experimentation and research methods with applications to natural and social sciences. General concepts of estimation and inferences. Systematic coverage of more widely used statistical methods, including simple and multiple regression, single factor and multifactor analysis of variance, multiple comparisons, goodness of fit tests, contingency tables, nonparametric procedures, and power of tests. At least one major statistical software package is introduced to aid calculations required for many of the techniques. Students are expected to make a presentation in an applied field and complete a data-based project as part of the course requirement.

Registration Restrictions: 100-level natural sciences course and a 100-level social sciences course, junior standing, and completion of GER Tier 1 (basic college-level skills) courses.

Prerequisites: STAT A252 or STAT A253 or STAT A307.

Attributes: UAA Integrative Capstone GER.

STAT A401 Statistical Methods 3 Credits
Parametric and nonparametric statistical methods. Topics will include, but not be restricted to, contingency table analysis, goodness-of-fit tests, simple linear and multiple regression, curvilinear regression, logistic regression, design and analysis of single and multifactor experiments, and introduction to multivariate statistics.

Special Note: Not available for credit to students who have completed STAT A601.

May Be Stacked With: STAT A601

Prerequisites: STAT A253 with a minimum grade of C or STAT A308 with a minimum grade of C.

STAT A402 Scientific Sampling 3 Credits
Sampling methods including simple random, stratified, systematic and cluster sampling. Special emphasis on estimation procedures including ratio and regression methods, and topics selected from allocations, direct sampling, inverse sampling, randomized response sampling, computer simulation of random variates, bootstrap, jackknife, and cross-validation.

Special Note: Not available for credit to students who have completed STAT A602.

May Be Stacked With: STAT A602

Prerequisites: STAT A252 with a minimum grade of C or STAT A253 with a minimum grade of C or STAT A307 with a minimum grade of C.

STAT A403 Regression Analysis 3 Credits
Simple and multiple regression, statistical inferences in regression, matrix formulation of regression, polynomial regression, ridge regression, nonlinear regression and normal correlation models. A major statistical package is used as a tool to aid calculations required for many of the techniques.

Special Note: Not available for credit to students who have completed STAT A603.

May Be Stacked With: STAT A603

Prerequisites: STAT A308 with a minimum grade of C.
STAT A404 Analysis of Variance 3 Credits
Single-factor models, factor effects, nonparametric tests, two-factor models, random and mixed effects models, multifactor studies, analysis of covariance and selected experimental designs. A major statistical package is used as a tool to aid calculations required for many of the techniques.
Special Note: Not available for credit to students who have completed STAT A604.
May Be Stacked With: STAT A604
Prerequisites: STAT A308 with a minimum grade of C.

STAT A407 Time Series Analysis 3 Credits
Decomposition of time series, seasonal adjustment methods and index numbers. Forecasting models, including causal models, trend models and smoothing models. Autoregressive (AR) forecasting models, moving average (MA) forecasting models and integrated (ARIMA) forecasting models. A major statistical package is used as a tool to aid calculations required for many of the techniques.
Special Note: Not available for credit to students who have completed STAT A607.
May Be Stacked With: STAT A607
Prerequisites: STAT A307 with a minimum grade of C or STAT A308 with a minimum grade of C.

STAT A408 Multivariate Statistics 3 Credits
Multivariate statistical methods including exploratory data analysis, geometrical interpretation of multivariate data, multivariate tests of hypotheses, multivariate analysis of variance, multivariate multiple regression, principal components, factor analysis, discriminant analysis, cluster analysis and multidimensional scaling.
Special Note: Not available for credit to students who have completed STAT A608.
May Be Stacked With: STAT A608
Prerequisites: STAT A308 with a minimum grade of C.

STAT A490 Selected Topics in Statistics 1-3 Credits
Advanced topics in statistics selected as a continuation of, or a complement to, the content of upper-division undergraduate statistics courses. Emphasis on applications.
Special Note: Depending on topics selected, use of a statistical software package may be required. May be repeated for a maximum of 9 credits with change of subtitle.
Registration Restrictions: Instructor's permission and a designated STAT course.

STAT A601 Advanced Statistical Methods 3 Credits
Parametric and nonparametric statistical methods. Topics will include, but are not restricted to, contingency table analysis, goodness-of-fit tests, simple linear and multiple regression, curvilinear regression, logistic regression, design and analysis of single and multifactor experiments, and introduction to multivariate statistics. Students will be required to complete a major research project, conduct literature review, write a short paper and make a presentation in a public forum.
Special Note: Not available for credit to students who have taken STAT A401.

Registration Restrictions: Graduate standing
May Be Stacked With: STAT A401

STAT A602 Advanced Scientific Sampling 3 Credits
Sampling methods including simple random, stratified, systematic and cluster sampling. Special emphasis on estimation procedures including ratio and regression methods and topics selected from: allocations, direct sampling, inverse sampling, randomized response sampling, Monte Carlo simulated variates, bootstrap, jackknife and cross validation. Students enrolled in this course will be expected to complete additional work at a higher level than those students enrolled in STAT A402 and complete a survey project.
Special Note: Not available for credit to students who have completed STAT A402.

Registration Restrictions: Graduate standing
May Be Stacked With: STAT A402

STAT A603 Advanced Regression Analysis 3 Credits
Simple and multiple regression, statistical inferences in regression, matrix formulation of regression, polynomial regression, ridge regression, nonlinear regression and normal correlation models. A major statistical package is used as a tool to aid calculations required for many of the techniques. Students enrolled in this course will be expected to complete additional work at a higher level than those students enrolled in STAT A403 and complete a research project.
Special Note: Not available for credit to students who have completed STAT A403.

Registration Restrictions: Graduate standing
May Be Stacked With: STAT A403

STAT A604 Advanced Analysis of Variance 3 Credits
Single-factor models, factor effects, nonparametric tests, two-factor models, random and mixed effects models, multifactor studies, analysis of covariance, and selected experimental designs. A major statistical package is used as a tool to aid calculations required for many of the techniques. Students enrolled in this course will be expected to complete additional work at a higher level than those students enrolled in STAT A404 and complete a research project.
Special Note: Not available for credit to students who have completed STAT A404.

Registration Restrictions: Graduate standing
May Be Stacked With: STAT A404

STAT A607 Advanced Time Series Analysis 3 Credits
Decomposition of time series, seasonal adjustment methods and index numbers. Forecasting models including causal models, trend models and smoothing models. Autoregressive (AR) forecasting models, moving average (MA) forecasting models and integrated (ARIMA) forecasting models. A major statistical package is used as a tool to aid calculations required for many of the techniques. Students enrolled in this course will be expected to complete additional work at a higher level than those students enrolled in STAT A407 and complete a research project.
Special Note: Not available for credit to students who have completed STAT A407.

Registration Restrictions: Graduate standing
May Be Stacked With: STAT A407
STAT A608 Advanced Multivariate Statistics 3 Credits
Multivariate statistical methods including exploratory data analysis, geometrical interpretation of multivariate data, multivariate tests of hypotheses, multivariate analysis of variance, multivariate multiple regression, principal components, factor analysis, discriminant analysis, cluster analysis and multidimensional scaling. Students enrolled in this course will be expected to complete additional work at a higher level than those students enrolled in STAT A408 and complete a research project.

Special Note: Not available for credit to students who have completed STAT A408.

Registration Restrictions: Graduate standing

May Be Stacked With: STAT A408