Statistics (STAT)

STAT 1040. Introduction to Statistics QL. (3 Credits)
Prerequisite(s): One of the following: MAT 1010 or MAT 1015 with a grade of C or better within the past two years; an ACT mathematics score of 23 (assuming the test has been taken within the last two years); appropriate placement by the Accuplacer test score
A quantitative literacy course with a statistical theme. Includes descriptive statistics, sampling, and inferential methods. Emphasizes problem solving and critical thinking.
Canvas Course Mat $91/Macmillan applies.

STAT 1045. Introduction to Statistics with Algebra QL. (5 Credits)
Prerequisite(s): One of the following: MAT 1010 or MAT 1015 with a grade of C or better within the past two years; an ACT mathematics score of 23 (assuming the test has been taken within the last two years); appropriate placement by the Accuplacer test score
A quantitative literacy course with a statistical theme. Includes descriptive statistics, sampling, and inferential methods. Emphasizes problem solving and critical thinking.
Canvas Course Mat $91/Macmillan applies.

STAT 2040. Principles of Statistics QL. (4 Credits)
Prerequisite(s): Within the past two years, MATH 1050 or MATH 1055 or MATH 1080 with a grade of C or higher or appropriate math placement test score.
Includes summarizing data, measures of central location, measures of variation, probability, mathematical expectation, probability distributions, sampling and sampling distributions, estimation, hypothesis testing, analysis of variance, regression analysis, and correlation.
Canvas Course Mats of $73/Wiley applies. Lab access fee of $10 applies.

STAT 2050. Introduction to Statistical Methods. (4 Credits)
Prerequisite(s): Within the past two years, MATH 1050 or MATH 1055 or MATH 1080 with a grade of C or higher or appropriate math placement test score.
Is an introductory statistics course for statistics majors. Applies discrete and continuous probability distributions to real data sets. Teaches confidence intervals and hypothesis testing for both one and two sample problems. Covers introductory topics in experimental design, linear regression, bootstrapping, and categorical data analysis.
Canvas Course Mats of $73/Wiley applies. Lab access fee of $10 applies.

STAT 2060. Introduction to Statistical Computing. (1 Credit)
Pre- or Corequisite(s): STAT 2040 or STAT 2050 with a grade of C or higher
Familiarizes students with the SAS statistical software package. Teaches how to organize, input data, and be able to use reference books to figure out the appropriate way to run the analysis needed using SAS.

STAT 3000. Applied Mathematics for Statistical Methods. (3 Credits)
Prerequisite(s): STAT 2040 or STAT 2050, and University Advanced Standing
Provides students with the mathematical background to complete upper division courses in applied statistical methods. Includes topics from calculus, linear algebra, mathematical statistics and introductory probability.

STAT 3040. Probability and Statistics for Engineering and the Sciences. (3 Credits)
Prerequisite(s): (STAT 2040 or STAT 2050 and MATH 2210 each with a grade of C or higher) and University Advanced Standing
Introduces mathematical statistics for scientists and engineers. Includes counting techniques, random variables, expected values, joint and marginal distributions, point estimation, hypothesis testing, analysis of variance, and regression.

STAT 4000. Applied Regression and Time Series WE. (3 Credits)
Prerequisite(s): STAT 2040 or STAT 2050 with a grade of C or higher and University Advanced Standing
Provides students in non-mathematical disciplines the ability to answer typical research questions for their senior projects or graduate-level research. Includes linear regression, transformations, variable selection techniques, logistic regression, indicator variables, multicollinearity, and ARIMA time series. Satisfies the VEE statistics requirement for the Society of Actuaries. Introduces standard software as a tool for statistical analysis.

STAT 4100. Design of Experiment. (3 Credits)
Prerequisite(s): STAT 2040 or STAT 2050 with a grade of C or higher and University Advanced Standing
Introduces the design and analysis of randomized comparative experiments. Includes single factor ANOVAs, randomized block designs, latin squares, factorial designs, and nested and split plot designs. Covers mixed models including random effects and computation of expected mean squares to form appropriate F-ratios. Uses SAS statistical program software to perform statistical analysis.

STAT 4200. Survey Sampling. (3 Credits)
Prerequisite(s): STAT 2040 or STAT 2050 with a grade of C or higher and University Advanced Standing
Introduces survey sampling including simple random sampling, stratified random sampling, systematic and cluster sampling. Discusses ratio and difference estimators, weighting for non-responses, eliminating sources of bias and designing the questionnaire.

STAT 4300. Stochastic Processes. (3 Credits)
Prerequisite(s): STAT 3040 or STAT 4710 with a grade of C or higher and University Advanced Standing
Teaches how to perform statistical inference on Markov chains, including classifying states, computing mean and variance of recurrence times, and investigating long-run limiting behavior to model physical systems uses the Poisson process. Teaches how to calculate and analyze queuing characteristics of each of the popular queuing models.

STAT 4400. Multivariate Analysis WE. (3 Credits)
Prerequisite(s): [(STAT 2040 or STAT 2050) and MATH 2270] or STAT 3000, both with a grade of C or higher, and University Advanced Standing
Introduces multivariate data analysis. Covers inference on data arising from the multivariate normal distribution using MANOVA, principal component analysis, factor analysis, canonical correlation analysis, discriminant analysis, and cluster analysis. Uses statistical software throughout.

STAT 4500. Nonparametric Statistics. (3 Credits)
Prerequisite(s): STAT 2040 or STAT 2050 with a grade of C or higher and University Advanced Standing
Introduces nonparametric statistical procedures to apply in situations when parametric statistics (usually based on normality) are not appropriate. Covers types of nonparametric analyses that includes one and two sample hypothesis tests, goodness-of-fit tests, contingency tables, block designs, and regression analysis.

STAT 4600. Statistical Process Control. (3 Credits)
Prerequisite(s): STAT 2040 or STAT 2050 with a grade of C or higher and University Advanced Standing
Presents the theory and methods of quality monitoring including process capability, control charts, acceptance sampling, quality engineering, and quality design.

STAT 4710. Mathematical Statistics-Probability and Statistics. (3 Credits)
Prerequisite(s): STAT 2040 or STAT 2050 with a grade of C or higher and University Advanced Standing
Pre- or Corequisite(s): MATH 2210 or MATH 221H
Introduces mathematical statistics including random variables, set theory, transformations, expectation, joint and marginal distributions, moment generating functions, and order statistics.

STAT 4720. Mathematical Statistics-Statistical Inference. (3 Credits)
Prerequisite(s): STAT 4710 with a grade of C or higher and University Advanced Standing
Is a continuation of STAT 4710. Includes estimation, sufficiency, completeness, hypothesis testing, statistical inference with the normal distribution, and Bayesian statistics.

STAT 6010. Theory of Statistics I. (3 Credits)
Prerequisite(s): Matriculation into the Mathematics Education, M.S. program or Matriculation into the Mathematics Graduate Certificate program, or approval of graduate program director
Covers probability theory, random variables, functions of random variables, probability distributions and their characteristics, transformations of random variables, Pearson’s correlation coefficient, and bivariate normal distribution and regression.

STAT 6020. Theory of Statistics II. (3 Credits)
Prerequisite(s): STAT 6010 with C or better
Emphasizes theoretical statistical inference. Includes concept sufficiency, theory of estimation, testing of statistical hypothesis, the Neyman-Pearson lemma, Bayesian inference, sequential testing, and large sample theory for inference.