STATISTICS (STAT)

STAT 1. Introduction to Statistics. 3 Units
Prerequisite(s): Math 10 or a score of 51 or higher on a proctored ALEKS PPL exam.
General Education Area/Graduation Requirement: Math Concepts & Quantitative Reasoning (B4)
Term Typically Offered: Fall, Spring

Descriptive statistics, basic concepts of probability and sampling with the aim of introducing fundamental notions and techniques of statistical inference.

STAT 10A. Introductory Statistics with Developmental Mathematics. 3 Units
Term Typically Offered: Fall, Spring, Summer

Prepares students for STAT 10B that requires background in data analysis process, descriptive statistics and the concept of randomness. Topics include: Summarizing the data distribution graphically and numerically; reasoning about bivariate numerical data; linear correlation and regression; linear, quadratic and exponential functions as a way of relating two variables; reasoning about bivariate categorical data; basic concepts of probability and the law of large numbers; conditional probability; discrete random variables; binomial distribution; and an introduction to continuous random variables. Lecture three hours.

STAT 10B. Introductory Statistics with Developmental Mathematics. 3 Units
Prerequisite(s): STAT 10A
General Education Area/Graduation Requirement: Math Concepts & Quantitative Reasoning (B4)
Term Typically Offered: Spring only

Continuation of STAT 10A. STAT 10B prepares students for research methods applications/courses in various disciplines. Topics include: Continuous random variables and normal distribution; sampling distributions and the central limit theorem; confidence intervals and hypothesis tests of means, proportions, difference in means and proportions; and chi-squared tests for categorical data analysis. Lecture three hours.

STAT 50. Introduction to Probability and Statistics. 4 Units
Prerequisite(s): MATH 26A, MATH 30, or appropriate high school based AP credit.
General Education Area/Graduation Requirement: Math Concepts & Quantitative Reasoning (B4)
Term Typically Offered: Fall, Spring, Summer

Sample spaces, combinatorics, and random variables. Density and distribution functions. Expectation, variance, and covariance. The binomial, uniform, poisson, negative binomial, hypergeometric, exponential, gamma, beta, and normal distributions. Sampling distributions, estimation, and hypothesis tests. Students are given periodic writing assignments which encourage them to think through concepts of the course.

STAT 96. Experimental Offerings in Statistics. 1 - 6 Units
Term Typically Offered: Fall, Spring

When there is a demand from a sufficient number of qualified students, one of the staff will conduct a seminar on some topic in statistics.

STAT 103. Intermediate Statistics. 3 Units
Prerequisite(s): STAT 50 or instructor consent
Term Typically Offered: Spring only – even years


STAT 115A. Introduction to Probability Theory. 3 Units
Prerequisite(s): MATH 31 and either STAT 1 or STAT 50
Term Typically Offered: Fall only

Probability axioms, discrete and continuous random variables, functions of random variables, joint densities, expectation, moment generating functions. Chebyshev’s inequality, transformations, weak law of large numbers, central limit theorem.

STAT 115B. Introduction to Mathematical Statistics. 3 Units
Prerequisite(s): STAT 115A
Term Typically Offered: Spring only

Point Estimation, interval estimation, hypothesis testing, the multivariate normal distribution, non-parametric tests.

STAT 128. Statistical Computing. 3 Units
Prerequisite(s): (STAT 1 or STAT 50) and (MATH 26A or MATH 30) or consent of the instructor.

Computer methods for accessing, transforming, summarizing, graphing and making statistical inferences from data; focus is on command-line statistical software, but menu-driven software may be introduced; application of computer methods to solve problems selected from the areas of modeling, simulation, inference and statistical learning.

STAT 155. Introduction to Techniques of Operations Research. 3 Units
Prerequisite(s): (STAT 1 or STAT 50) and (MATH 26A or MATH 30) or consent of the instructor.

Application of computer methods to solve problems selected from the areas of modeling, simulation, inference and statistical learning.

STAT 196K. Analyzing and Processing Big Data. 3 Units
Prerequisite(s): (STAT 1 or STAT 50) and (MATH 26A or MATH 30) and (STAT 128 or CSC 15), or consent of the instructor.
Term Typically Offered: Fall, Spring

Statistical analysis of large, complex data sets. Topics include memory efficient data processing, the split-apply-combine strategy, rewriting programs for scalability, handling complex data formats, and applications such as statistical learning, dimension reduction, and efficient data representation. Students will access data and run code on remote servers.
STAT 199. Special Problems. 1 - 6 Units
Term Typically Offered: Fall, Spring

Individual projects or directed reading. Open only to students who appear competent to carry on individual work. Admission to this course requires approval of the instructor in addition to the approval of the advisor and the Department Chair.

Credit/No Credit

STAT 215A. Introduction to Mathematical Statistics. 3 Units
Prerequisite(s): STAT 115A, STAT 115B; MATH 134 is recommended.
Term Typically Offered: Fall, Spring

Probability measure, conditional probability and independence, random variables, characteristic and moment-generating functions, modes of convergence.

STAT 215B. Topics in Introduction to Mathematical Statistics. 3 Units
Prerequisite(s): STAT 215A.
Term Typically Offered: Fall, Spring


Note: May be taken twice with approval of Graduate Coordinator.

STAT 299. Special Problems. 1 - 6 Units
Term Typically Offered: Fall, Spring

Any properly qualified student who wishes to pursue a problem may do so if the proposed subject is acceptable to the department committee, the supervising instructor and the student's advisor.