STATISTICS (STAT)

Courses

STAT 115 Statistical Reasoning Credits: 3
This course is intended for majors in less quantitative fields. The focus of the course will be on developing critical thinking abilities and decision making using data in everyday life. Emphasis will be on statistical reasoning underlying the methods of sampling, statistical inference in terms of evaluating the accuracy of an estimate in the context of uncertainty, drawing conclusions from data and studying relationships in data. Students will be trained to perform hands-on-analysis of real data sets using a computer package. No previous computing experience is required.

STAT 235 Elementary Statistics Credits: 3
An introduction to descriptive and inferential statistics. Organization and presentation of data, averages and variations, elementary probability, random variables, special discrete distributions, normal distributions, sampling distributions, point estimation, confidence intervals, and hypothesis testing.
Prerequisites: MATH 110 with a grade of C- or higher, or ALEKS score of 61 or higher.

STAT 436 Introduction To Mathematical Statistics I Credits: 3
This course is the first of a calculus-based statistics sequence. It begins with basic concepts of probability, discrete and continuous distributions, expectation and variance, and ends with the central limit theorem. Recommended preparation: MATH 301 or COMP-SCI 191.
Prerequisites: MATH 220.

STAT 441 Introduction To Mathematical Statistics II Credits: 3
Sampling Distributions; point estimation; internal estimation; hypothesis testing; analysis of variance; nonparametric methods; statistical software applications; topics in Applied Statistics.
Prerequisites: STAT 436.

STAT 480 Statistical Models in Actuarial Science Credits: 3
This course covers the statistical foundation of actuarial models and their applications. Topics include survival and severity models, Kaplan-Meier and Nelson-Aalen estimators, aggregate and credibility models for insurance losses, discrete time Markov chains, ruin theory, and simulation.
Prerequisites: STAT 441.

STAT 482 Statistical Models for Life Contingencies Credits: 3
The basic statistical theory of actuarial models for life uncertainties such as time of death. Multiple life and multiple decrement models, statistical models for life and contingent insurance; last survivor, disability, withdrawal, retirement and reserving models for life insurance.
Prerequisites: STAT 441.

STAT 484 Theory of Pension and Social Security Credits: 3
Topics include policy values for policies with cash flows at discrete or continuous time intervals, multiple state models, pension mathematics such as the salary scale function, the service table, and valuation of benefits; Interest rate risk and the yield curve, emerging costs and profit testing for traditional life insurance, emerging costs for equity-linked insurance
Prerequisites: STAT 441.

STAT 496 Internship/Practical Training in Mathematics or Statistics Credits: 1-3
This course provides an internship or other practical training arrangement using mathematics or statistics in an industrial, academic or other professional setting. Department approval of internship experience or practical experience required. Repeatable with up to a combined 3 credits toward the major. Recommended preparation: MATH 250.