

STAT: STATISTICS (STAT)

STAT 210. Elementary Statistics I. (3 Credits)

An introductory statistics course without a calculus prerequisite. Presentation of data, frequency distributions, descriptive statistics, elementary concepts of probability, random variables, binomial and normal distributions, sampling procedures, student's t-test, linear correlation. Interpretation of examples of data which occur in daily life. This course cannot be taken as a mathematics elective by mathematics majors. Prerequisites: MATH 112 Basic Mathematics I; MATH 113 Basic Mathematics II or the equivalent 201608.

STAT 211. Elementary Statistics II. (3 Credits)

Sampling of attributes, comparison of several samples, one-way analysis of variance, sign test, median test, Kruskal-Wallis test and test for randomness, simple regression analysis and Statistical software. Prerequisite: STAT 210 201608.

STAT 330. Probability and Statistics I. (3 Credits)

An introductory course in probability and statistics with an elementary calculus prerequisite. Elementary descriptive statistics, basic probability rules, conditional probability, independence, Bayes' theorem, discrete and continuous probability distributions, probability density functions, binomial, Poisson, hypergeometric, negative binomial, geometric and normal distributions. Prerequisite: MATH 201 Calculus II or MATH 261 Calculus II 201608.

STAT 340. Probability Stat Cmptr Scienti. (3 Credits)

Introduction to the concepts of probability, random variables, estimation, hypothesis testing, regression, and analysis of variance with emphasis on application. Prerequisites: MATH 261.

STAT 380. Probability & Statistics II. (3 Credits)

Mathematical derivations, computational formulas, and applications and interpretations associated with the techniques of probability theory and elementary statistical inference will be emphasized. Moment-generating functions, basic sampling distribution theory, t and chi-square distributions, one-sample estimation and tests of hypotheses. Prerequisites: MATH 360; STAT 330 or STAT 340.

STAT 382. Introduction To Sampling Metho. (3 Credits)

A course that presents the basic ideas of sampling: random, stratified, systematic and cluster sampling, ratio and regression estimates, estimation of sample size, sampling methods in social, economic and biological surveys, sources of error in surveys. Prerequisite: STAT 380 201808.

STAT 385. Analysis Of Variance. (3 Credits)

Theory, methodology, and practical applications of analysis of variance (ANOVA). Topics will include: one-factor and two-factor ANOVA; multiple comparisons; two-factor and three-factor balanced factorial designs with interactions; random, fixed and mixed-effect models; contrasts and confounding; and the regression approach to ANOVA. Prerequisite: STAT 380 201608.

STAT 410. Advanced Statistical Methods. (3 Credits)

A course designed for students who plan to apply statistical methods in the context of research problems in social sciences, natural sciences, agriculture and education. Uses of computers and packaged computer programs are emphasized. Prerequisite: STAT 380 202508.

STAT 480. Probability & Statistics III. (3 Credits)

A course emphasizing the statistical techniques which are useful in the treatment of multiple samples. Topics include the properties of joint discrete and continuous probability distributions, conditional and marginal distributions, covariance, independent random variables, estimation and hypothesis testing of population parameters in the two-sample case, chi-square tests, and simple linear regression and correlation. Prerequisite: STAT 380 202508.

STAT 481. Nonparametric Statistics. (3 Credits)

A course which examines statistical techniques which are applicable even if the form of the sampled population is unknown. Wilcoxon rank-sum test, Mann-Whitney U-test, sign test, Wilcoxon signed-rank test, tests for randomness, Spearman's correlation, Kolmogorov-Smirnov statistics, Turkey's quick test, Friedman and Cochran's test, computer programs. Prerequisite: STAT 380 202508.

STAT 482. Applied Multivariate Statistic. (3 Credits)

Multivariate methods using matrix algebra and applied statistics to analyze several correlated measurements made on each experimental unit. Multivariate normal distribution, estimation and hypothesis testing in multiple regression, Hotelling's T, one-way multivariate analysis of variance, introduction to discriminant and factor analysis, principal components and canonical correlations and statistical software. Prerequisite: STAT 410 201608.

STAT 484. Applied Probability. (3 Credits)

Probability theory applied to the study of phenomena in engineering, management science, operations research, and the natural sciences. Markov's inequality, conditional expectation, Markov chains, Chapman-Kolmogorov equation, interarrival and waiting time distributions. Prerequisite: STAT 480.

STAT 490. Probability Theory. (3 Credits)

A rigorous development and proofs of the theory of probability. Formal probability systems, conditional probability, sequences of events, independence of events, random variables, probability density and distribution functions, joint distributions, independence of random variables, functions and transformations of random variables, fundamental limit theorems. Prerequisites: At least two 400-level statistics courses or consent of the instructor.