Official Calendar: Applied statistics for students with a first-year calculus background. Estimation and testing of hypotheses, problem formulation, models and basic methods in analysis of variance, linear regression, and non-parametrics. Descriptive statistics and probability are presented as a basis for such procedures. Credits: 3 Pre-reqs: One of MATH 101, MATH 142 and one of DATA 101, COSC 221, ECON 102. Course Objectives: The course is designed to give students a solid foundation in statistics and present probability as the basis for making decisions. By taking this course, students will be positioned to assess the presence of variability in real-world problems and realize the importance of statistical approaches to decision-making when variability is present. Statistical tools play a vital role in modern day research and data analysis. Consequently, statistical software (particularly R) will be incorporated throughout the course. Learning Outcomes: At the end of this course, students should be able to: 1. define and differentiate between key terminology and special notation used in statistics; 2. demonstrate their understanding of descriptive statistics by using R to create numerical and graphical data summaries and properly interpreting those results; 3. demonstrate an understanding of basic probability concepts through identifying key distributions, computing basic probabilities, and properly interpreting their numeric value; 4. explain statistical inference concepts, including sampling distributions, confidence intervals, hypothesis tests, and p-values; 5. demonstrate their knowledge of basic statistical inferential by identifying an appropriate statistical procedure in a variety of situations, carrying out the statistical procedure (either “by hand” or using statistical software), and effectively communicating a proper interpretation of the results; Topic include Module 1: Introduction to Data Module 2: Probability Module 3: Distributions of random variables Module 4: Foundations for inference Module 5: Inference for numerical data Module 6: Introduction to linear regression Module 7: Analysis of Variance