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| |  |  |  | | --- | --- | --- | | *Approved: June 2025* | *Effective: Fall 2025* | | | **MATERIAL TO BE COVERED** | **SECTIONS FROM TEXT** | **TIME LINE** | | Introduction to Statistics: Sampling, Types of Data, Design of Experiments, Bias in Studies, Graphical Summaries of Qualitative Data, Frequency Distributions and Graphs of Quantitative Data, Misleading Graphs, Descriptive Statistics | Chapter 1, Chapter 2, Chapter 3 | 6 Hours | | Probability: Basic Ideas, the Addition Rule and Rule of Complements, Conditional Probability and the Multiplication Rule (Optional: Counting) | 5.2 - 5.3  Optional: 5.4 | 3 Hours | | Discrete Probability Distributions: Random Variables, Binomial Distribution (Optional: Poisson Distribution) | 6.1 - 6.2 Optional: 6.3 | 3 Hours | | Normal Distribution: Standard Normal Curve, Applications of the Normal Distribution, Sampling Distributions and the Central Limit Theorem, the Central Limit Theorem for Proportions, Normal Approximation to the Binomial Distribution, Assessing Normality | 7.1 - 7.6 | 5 Hours | | Confidence Intervals and sample size (single parameter): mean, proportion. (Optional: variance. Omit: sample size for variance) | 8.1 - 8.3, 8.5 Optional: 8.4 | 4 Hours | | Hypothesis testing (single parameter): mean, p-value, t-test, proportion. (Optional: standard deviation & variance, power) | 9.1 - 9.4, 9.6 Optional: 9.5, 9.7 | 5.5 Hours | | Optional: Confidence Intervals for Two Parameters | Optional: 10.1 - 10.3 |  | | Hypothesis testing (two parameters): comparing two means (dependent or independent samples), proportions. (Optional: variances and Multiple Testing Problem) | 11.1 - 11.3  Optional 11.4 - 11.5 | 4 Hours | | Correlation and regression: linear correlation, linear regression. (Optional: variation, multiple regression, modeling) | 4.1 - 4.3. 13.1 - 13.2 | 3.5 Hours | | Applications of Chi square: multinomial experiments, contingency tables, goodness of fit, tests for independence and homogeneity. | 12.1 - 12.2 | 2.5 Hours | | Analysis of variance: one-way with equal and unequal sample sizes. | Section 14.1 | 2 Hours | |  |  |  | | 3-unit class: hours total 42.5 (15 x 2 hours 50 minutes) – hours for exams + 2.5 hour final  This outline allows for 4 hours of exams.  NOTE: The course will include an introduction to the use of computers in statistics. Instructors are encouraged, where practical, to incorporate computer demonstrations and computer assignments in their courses. Between 10% and 15% of the course grade should be based on the students' ability to appropriately use computer software, interpret the results and turn in homework. The software used in the class will be determined by the instructor. Approximately 5% of the course grade should be based on a project involving a deep exploration of an application of statistics, or a study using statistical analysis devised and conducted by the student. Since this is an Honors class, topics should be presented in more depth and should include many current real world applications. | | | |  |  |  | | Submitted by: Case, Chan, Chavez, DeWilde, Guth, Kim, Kirchgraber, Lancaster, Pyle, Troxell, WohlgezogenMath Department Policy can be found at: <https://www.mtsac.edu/math/departmentpolicy.html> | | | |