|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Approved: June 2021 Effective: FALL 2021*  |  |  |  | | --- | --- | --- | | **MATERIAL TO BE COVERED** | **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, Measures of Center, Variability and Position | Chapter 1, 2  & 3 | 5 Hours | | **Probability:** Basic Ideas, the Addition Rule and Rule of Complements, Conditional Probability and the Multiplication Rule  (Optional: Probabilities through simulations, Counting, Bayes Theorem) | 4.1 - 4.3  Optional 4.4–4.5 | 4 Hours | | **Discrete Probability Distributions:** Random Variables, Binomial Distribution (Optional: Poisson Distribution) | 5.1 - 5.2  Optional 5.3  Optional: 5.5 | 4 Hours | | **Normal Distribution:** Standard Normal Curve, Applications of the Normal Distribution, Sampling Distributions and the Central Limit Theorem, Assessing Normality, Normal Approximation to the Binomial Distribution (See Supplement) | 6.1 - 6.6 | 4 Hours | | **Confidence Intervals and Sample Size with One Sample**: Proportions and Mean (Optional: Standard Deviation or Variance) | 7.1 - 7.2  Optional 7.3 | 4 Hours | | **Hypothesis Testing with One Sample:** Proportions and Mean; P-value & Critical Value methods; Type I & Type II errors  (Optional: Standard Deviation or Variance)  (Optional: standard deviation & variance) | 8.1 - 8.3  Optional 8.4 | 5 Hours | | **Hypothesis Testing with Two Samples:** Comparing Two Proportions and Two Means (Dependent and Independent Samples) (Optional: Standard  Deviations or Variances, and Confidence Intervals) | 9.1 - 9.3  Optional 9.4 | 5 Hours | | **Correlation and Regression:** Linear Correlation, Linear Regression.  (Optional: Variation, Multiple and Nonlinear Regression, Modeling) | 10.1 - 10.2  Opt. 10.3-10.5 | 2.5 Hours | | **Applications of Chi Square:** Multinomial Experiments, Contingency Tables, Goodness of Fit, Tests for Independence and Homogeneity  (Optional: McNemar's Test) | 11.1 - 11.2 | 2.5 Hours | | **One Way Analysis of Variance (ANOVA)** | 12.1 | 2.5 Hours | | Optional: Nonparametric Statistics | Chapter 13 |  |  3-unit class: hours total 42.5 (15 x 2 hours 50 minutes) – hours for exams + 2.5 hour finalThis 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. Submitted by: Lancaster, Chavez, Dewilde, Troxell, Case, Guth, Kim, Chan, Pyle, Kirchgraber, WohlgezogenMath Department Policy can be found at: <https://www.mtsac.edu/math/departmentpolicy.html> |