**MATH 110 + MATH 11 OUTLINE**

# **ELEMENTARY STATISTICS with SUPPORT**

TEXT: Elementary Statistics, 14th Edition, Triola

## *Approved: Nov 2023 Effective: Fall 2024*

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| **MATERIAL TO BE COVERED** | **TEXT** | **Suggested****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**Support material for Introduction to Statistics:** Additional support for 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 | Chapters1, 2 & 3 | 5HoursSUPPORT4.3Hours |
| **Probability:** Basic Ideas, the Addition Rule and Rule of Complements, Conditional Probability and the Multiplication Rule (Optional: Probabilities through simulations, Counting, Bayes Theorem)**Support material for Probability:** Additional support for Basic Ideas, the Addition Rule and Rule of Complements, Conditional Probability and the Multiplication Rule (Optional: Probabilities through simulations, Counting, Bayes Theorem) | 4.1 - 4.3Optional4.4–4.5 | 4HoursSUPPORT2.6Hours |
| **Discrete Probability Distributions:** Random Variables, Binomial Distribution (Optional: Poisson Distribution)**Support material for Discrete Probability Distributions:** Additional support for Random Variables, Binomial Distribution (Optional: Poisson Distribution) | 5.1 - 5.2Optional5.3 | 4HoursSUPPORT2.6Hours |
| **Normal Distribution:** Standard Normal Curve, Applications of the Normal Distribution, Sampling Distributions and the Central Limit Theorem, Assessing Normality, the Normal Approximation to the Binomial Distribution (See Supplement)**Support material for Normal Distribution:** Additional support for Standard Normal Curve, Applications of the Normal Distribution, Sampling Distributions and the Central Limit Theorem, Assessing Normality, the Normal Approximation to the Binomial Distribution (See Supplement) | 6.1 - 6.6 | 4HoursSUPPORT2.6Hours |
| **Confidence Intervals and Sample Size with One Sample:** Proportion and Mean (Optional: Standard Deviation or Variance)**Support material for Confidence Intervals and Sample Size with One Sample:** Additional support forProportion and Mean (Optional: Standard Deviation or Variance) | 7.1 - 7.2Optional 7.3 | 4HoursSUPPORT2.6 Hours |
| **Hypothesis Testing with One Sample:** Proportion and Mean; P-value & Critical Value Methods; Type I & Type II errors (Optional: Standard Deviation or Variance)**Support material for Hypothesis Testing with One Sample:** Additional support for Proportion and Mean; P-value & Critical Value Methods; Type I & Type II errors (Optional: Standard Deviation or Variance) | 8.1 - 8.3Optional 8.4 | 5HoursSUPPORT4.4Hours |
| **Hypothesis Testing with Two Samples:** Comparing Two Proportions and Two Means (Dependent or Independent Samples) (Optional: Standard Deviations or Variances, and Confidence Intervals)**Support material for Hypothesis Testing with Two Samples:** Additional support for Comparing Two Proportions and Two Means (Dependent or Independent Samples) (Optional: Standard Deviations or Variances, and Confidence Intervals) | 9.1 - 9.3Optional 9.4 | 5HoursSUPPORT4.3 Hours |
| **Correlation and Regression:** Linear Correlation, Linear Regression. (Optional: Variation, Multiple and Nonlinear Regression, Modeling)**Support material for Correlation and Regression:** Additional support for Linear Correlation, Linear Regression. (Optional: Variation, Multiple and Nonlinear Regression, Modeling) | 10.1 - 10.2Optional10.3 – 10.5 | 2.5HoursSUPPORT1.7Hours |
| **Applications of Chi Square**: Multinomial Experiments, Contingency Tables, Goodness of Fit, Tests for Independence and Homogeneity (Optional: McNemar's test)**Support material for Applications of Chi Square**: Additional support for Multinomial Experiments, Contingency Tables, Goodness of Fit, Tests for Independence and Homogeneity (Optional: McNemar's test) | 11.1 - 11.2 | 2.5HoursSUPPORT1.7Hours |
| **One-Way Analysis of Variance**: one-way with equal and unequal sample sizes. **Support material for One-Way Analysis of Variance**: Additional support for one-way with equal and unequal sample sizes.  | 12.1 | 2.5HoursSUPPORT1.7Hours |
| Optional: Nonparametric Statistics | Chapter 13 |  |

 All hours listed are face-time; i.e. breaks are administered by the instructor separately and are in addition to the hours listed.

###  2-unit class: hours total 30 (15 x 2 hours) 0 hours subtracted for exams

###  3-unit class: hours total 42.5 (15 x 2 hours 50 minutes) – 4 hours for exams + 2.5 hour final hour

###  Math 110: The outline allows for 4 hours of exams excluding the 2.5 final exam

###  Math 11: The outline does not include time for exams. Exams in the support course are at the discretion of the professor.

###  Math 11 is a 15-week course. The corequisite course does not meet during finals week.

### Corequiste courses are Pass/No Pass grading.

**MATH 110: NOTE:** The course will include an introduction to the use of computers in statistics. Professors 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 professor.

Submitted by: Lancaster, Chavez, Dewilde, Troxell, Case, Guth, Kim, Chan, Pyle, Kirchgraber, Wohlgezogen

Math Department Policy can be found at: <https://www.mtsac.edu/math/departmentpolicy.html>