Proficiency Exam. Topics Covered.

1) Descriptive Statistics
   a) Measures of Location: Mean, Median, Mode, Percentiles, Quartiles
   b) Measures of Variability: Range, Interquartile Range, Variance, Standard Deviation, Coefficient of Variation.
   c) Measures of Distribution Shape, Relative Location and Detecting Outliers: Distribution Shape, z-Scores, Chebyshev's Theorem, Empirical Rule, Detecting Outliers.
   d) Measures of Association Between Two Variables: Covariance, Correlation Coefficient

2) Introduction to Probability
   a) Experiments, Counting Rules, and Assigning Probabilities
   b) Events and Their Probabilities
   c) Basic Relationships of Probability
   d) Conditional Probability

3) Discrete Probability Distributions
   a) Random Variables
   b) Discrete Probability Distribution
   c) Expected Value and Variance
   d) Binomial Probability Distributions

4) Continuous Probability Distributions
   a) Uniform Probability Distribution
   b) Normal Probability Distribution

5) Sampling and Sampling Distributions
   a) Simple Random Sampling
   b) Point Estimation
   c) Sampling Distribution of the Sample Mean
   d) Sampling Distribution of the Sample Proportion

6) Interval Estimation
   a) Population Mean
   b) Population Proportion

7) Hypothesis Tests
   a) Null and Alternative Hypotheses
   b) Type I and Type II Errors
   c) Population Mean
   d) Population Proportion

8) Comparisons Involving Means
   a) Inferences About the Difference Between Two Population Means: Independent Samples
   b) Inferences About the Difference Between Two Population Means: Matched Samples

9) Comparisons Involving Proportions
   a) Inferences About the Difference Between Two Population Proportions

10) Simple Linear Regression
    a) Simple Linear Regression Model
    b) Least Squares Method
    c) Coefficient of Determination
    d) Model Assumptions
    e) Testing of Significance: Estimate of the Variance, t-Test, Confidence Intervals for the Coefficients, F-test.