Topics covered on STT 213 Equivalency Exam

1. Descriptive Statistics
    a. Graphical displays
        i. Bar charts and pie charts
        ii. Histograms and boxplots
        iii. Scatterplots
        iv. Time series plots*
        v. Stacked bar charts, marginal and conditional distributions
    b. Numerical Summaries
        i. Measures of center: mean and median
        ii. Measures of spread: IQR, variance, standard deviation, coefficient of variation*
        iii. Empirical Rule and Chebyshev's Rule*
        iv. Correlation and covariance*
2. Probability and Random Variables
    a. Probability
        i. Sample spaces, events, union, intersection, complement
        ii. Permutations* and combinations*
        iii. Addition Rule, Complement Rule
        iv. Conditional Probability, Multiplication Rule, Independence
        v. Baye's Rule
    b. Discrete Random Variables
        i. Probability distribution functions
        ii. Expected value and variance
        iii. Mean and variance of linear functions*
        iv. Binomial, hypergeometric* and Poisson distributions
        v. Jointly distributed random variables: marginal, conditional, covariance*
    c. Continuous Random Variables
        i. Probability density functions
        ii. Uniform, Normal and exponential distributions*
        iii. Mean and variance of linear functions
    d. Sampling and Sampling Distributions
        i. Simple random samples
        ii. Sampling distribution of the sample mean
        iii. Sampling distribution of the sample proportion
        iv. Sampling distribution of the sample variance*
3. Inferential Statistics
    a. Estimation
        i. Point estimation: unbiasedness* and efficiency*
        ii. Confidence interval
            1. a population mean
            2. a population proportion
            3. a population variance*

* denotes topics covered in STT 213 and not STT 212

iii. Confidence interval for the difference between
    1. two population means
        a. Independent samples, equal variance
        b. Independent samples, unequal variance
        c. Dependent samples
    2. two population proportions
iv. Sample size calculations
    1. a population mean
    2. a population proportion

b. Hypothesis Testing
    i. Logic of hypothesis testing and types of error
    ii. Hypothesis test
        1. a population mean
        2. a population proportion
        3. a population variance*
    iii. Assessing the power of a hypothesis test*
    iv. Hypothesis test for the difference between
        1. two population means
            a. Independent samples, equal variance
            b. Independent samples, unequal variance
            c. Dependent samples
        2. two population proportions
    v. Analysis of Categorical Data
        1. Goodness of fit tests
        2. Test of independence

4. Regression
    a. Linear regression model
    b. Least squares coefficient estimators and derivation*
    c. Coefficient of determination
    d. Inference for the slope
    e. Prediction: confidence intervals for mean response and prediction intervals*
    f. Graphical analysis: residual plots, influential points and outliers

Recommended textbook: Statistics for Business and Economics by Newbold et al. https://www.amazon.com/Statistics-Business-Economics-Paul-Newbold/dp/0132745658

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