STAT 515 Fall 2024 Class Schedule

Ray Bai

Basic Set Theory and Probability

- **8/21/24**: syllabus and course overview, introduction to sets
- **8/23/24**: basic set theory, basics of probability
- **8/26/24**: basics of probability, counting rules
- **8/28/24**: counting rules, conditional probability
- **8/30/24**: independence, conditional independence, Bayes Theorem
- **9/2/24**: **Labor Day (no class)**
- **9/4/24**: Bayes Theorem, random variables

Probability Distributions

- **9/6/24**: probability distribution, expected value, and variance for discrete random variables
- **9/9/24**: Bernoulli trials, binomial distribution
- **9/11/24**: binomial distribution, Poisson distribution
- **9/13/24**: continuous probability distributions, uniform and exponential distributions
- **9/16/24**: normal distribution
- **9/18/24**: calculating probabilities and quantiles with the normal distribution

End of Exam 1 material

Sampling Distributions and Central Limit Theorem

- **9/20/24**: random sample, sampling distributions
- **9/23/24**: sampling distribution of the sample mean, Central Limit Theorem (CLT)
- **9/25/24**: sampling distribution of the sample proportion, more examples of the CLT
- **9/27/24**: Review for Exam 1
- **9/30/24**: checking normality in small samples, bootstrap to approximate sampling distributions
- **10/2/24**: **Exam 1 (in class)**

Confidence Intervals for Means and Proportions

- **10/4/24**: confidence interval for population mean (variance known)
- **10/7/24**: confidence interval for population proportion
- **10/9/24**: variance estimation, chi-square distribution, confidence interval for population variance
- **10/11/24**: confidence interval for population mean (unknown variance), t-distribution
- **10/14/24**: confidence interval for population mean (unknown variance), bootstrap intervals
- **10/16/24**: sample size calculations, margin of error
- **10/18/24**: **Fall break (no class)**

Hypothesis Testing for Means and Proportions

- **10/21/24**: hypothesis test for population mean (variance known), Type I and Type II errors
- **10/23/24**: hypothesis test for population mean (variance unknown)
- **10/25/24**: hypothesis test for population proportion
- **10/28/24**: p-values
- **10/30/24**: p-values, connections between testing and confidence intervals

End of Exam 2 material

- **11/1/24**: effect size, power of a test

Two-Sample Inference

- **11/4/24**: confidence interval and hypothesis test for difference of two independent means
- **11/6/24**: confidence interval and hypothesis test for difference of two proportions
- **11/8/24**: review for Exam 2
- **11/11/24**: **Exam 2 (in class)**
- **11/13/24**: confidence interval and hypothesis test for matched pairs

One-Way ANOVA and Simple Linear Regression

- **11/15/24**: comparative experiments, one-way ANOVA, checking assumptions for one-way ANOVA
- **11/18/24**: F-distribution, F-test for one-way ANOVA
- **11/20/24**: F-test for one-way ANOVA
- **11/22/24**: Pearson's correlation coefficient, simple linear regression (SLR)
- **11/25/24**: **Thanksgiving holiday (no class)**
- **11/27/24**: **Thanksgiving holiday (no class)**
- **11/29/24**: **Thanksgiving holiday (no class)**
- **12/2/24**: least squares estimation, checking assumptions for SLR
- **12/4/24**: inference for the slope in SLR
- **12/6/24**: review for final exam
- **12/13/24**: **Final Exam from 12:30-2:30 pm**