Stat 982: Advanced Inference Syllabus

Instructors:
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Office Hours

By Appointment

Course Overview

Uniformly minimum variance unbiased estimators, decision-theoretic Bayes estimation, frequentist testing (likelihood ratio tests, Neyman-Pearson lemma, uniformly most powerful tests), Bayes testing and Bayes factors, nonparametric tests, multiple comparisons procedures

Reference Textbooks

Theory of Point Estimation, Lehmann & Casella

Testing Statistical Hypotheses, Lehman & Romano

Theory of Statistics, Schervish, Mark

List of Topics

Unit 1	Sufficiency and the Factorization Theorem	Sufficiency, factorization, exponential families, Bahadur's Theorem
Unit 2	Decision Theory	Decision theory, Bayes estimation, Minimax estimators, admissibility, optimality
Unit 3	Estimator Optimality	Minimum variance, unbiasedness, asymptotic optimality
Unit 4	Testing Optimality	Large sample theory, hypothesis testing, uniformly most powerful tests, intervals

You should expect to have approximately two homework assignments (~5 questions each) in each unit. Homeworks will be due approximately one week after they are assigned and will be graded for completeness and correctness. No late assignments will be accepted except by prior arrangement.

Grading

	Percent
Homework assignments (about 8, worth ~10% each)	80%
Participation/Discussion/Engagement	20%

University Policies: https://executivevc.unl.edu/academic-excellence/teaching-resources/course-policies