

STATISTICS 582:
Advanced Theory of Statistical Inference
Winter, 2011

Tentative Outline

1. **Chapter 4: Efficient Likelihood Estimation and Related Tests, continued**
 - Consistency of maximum likelihood estimates.
 - The EM algorithm and related methods.
 - Nonparametric and semiparametric MLE.
 - Limit theory for the statistical agnostic: $P \notin \mathcal{P}$.
2. **Chapter 5: Bayes Methods and Elementary Decision Theory**
 - Elementary Decision Theory
 - Structure of the risk body: the finite case
 - The finite case: relations between Bayes minimax, admissibility
 - Posterior distributions
 - Finding Bayes rules
 - Finding Minimax rules
 - Admissibility and Inadmissability
 - Asymptotic theory of Bayes estimators
 - Nonparametric Bayes estimation
3. **Chapter 6: Testing**
 - Neyman - Pearson tests
 - Unbiased tests; Conditional tests; Permutation tests
 - Invariance in testing; Rank methods
 - Local asymptotic theory for testing: more contiguity theory