STATISTICS 582:
Advanced Theory of Statistical Inference
Winter, 2018

Tentative Outline

1. **Chapter 4: Efficient Likelihood Estimation and Related Tests, continued**
   - Consistency of maximum likelihood estimates (Wald's theorem).
   - 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 Inadmissibility
   - 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