

STA 4322- STA 5325 Mathematical Statistics January 8, SPRING 2015

Days/Time/Room: TR 2:00 PM - 3:15 PM OSB 215

Instructor: Prof. Dr. Dr. Vic Patrangenaru

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Office hours: TR 1:00 PM-1:45 PM

Texts: 1. Statistical Inference, Second Edition, by George Casella and Roger Berger.

ISBN: 0534243126 (online as well)

2. A Course in Mathematical Statistics and Large Sample Theory, by Rabi Bhat-
tacharya, Lizhen Lin and Victor Patrangenaru.

3. Detailed Online Notes at www.stat.fsu.edu \ ~ vic. Additional info will be given in
class.

Teaching Assistant: Mingfei Qiu (ABD)

Prerequisite: STA4321 - STA 5323.

Course description: This course is designed to give students both an rigorous and
logical account for Basic and Nonparametric Statistical Inference.

Upon completion of the course students should master basic concepts such as Decision
Rules and Risk Functions, The Maximum Likelihood Estimator, Method of Moments,
Minimax Decision Rules, Simple Hypotheses and the Neyman-Pearson Lemma, Du-
ality Between Tests and Confidence Regions, Invariant Tests, the Two-Sample Prob-
lem and Rank Tests, The Gauss-Markov Theorem, Testing in Linear Models, Asymp-
totic Distribution of Sample Quantiles, Order Statistics, Asymptotic Relative Efficiency
(ARE) of Estimators, Constructing Nonparametric Confidence Regions, The Cramér-

Rao Bound, Asymptotics of the Maximum Likelihood Estimators – The Multiparameter Case, Bayes Estimators and their Asymptotic Efficiency, Asymptotic Distribution Theory of Parametric Tests, Asymptotic Confidence Regions for parameters in Linear Regression, Nonparametric Curve Estimation.

After a review on Sampling distributions from Casella and Berger, the chapters from the text partially covered are :

- Chapter 1 Introduction
- Chapter 2 Decision Theory
- Chapter 3 Introduction to General Methods of Estimation
- Chapter 5 Testing Hypotheses
- Chapter 6 Consistency and Asymptotic Distributions of Statistics
- Chapter 7 Large Sample Estimation in Parametric Models
- Chapter 8 Tests in Parametric and Nonparametric Models
- Chapter 10 Nonparametric Curve Estimation

Attendance policy: Active attendance adds up to 5 bonus points. If you miss classes without a formal excuse, the extracredit is lost.

Grading: The course grade will be calculated on the basis of hw (30%), one midterm exams (30%), and a final exam (40%) on Monday, April 27.

Honor Code: Students are expected to be uphold the Academic Honor Code as de-

scribed in the FSU General Bulletin or in the FSU Student Handbook.

Disclaimer: This syllabus provides a general plan; deviations may be necessary.