

STA 5334 Limit Theory of Statistics

January 8, SPRING 2019

Instructor : Vic Patrangenaru

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Days/Time/Room: TT 11:00 PM - 12:15 PM OSB 205

Office hours: TT 10:00 PM - 10:45 PM or by arrangement

Textbook:

Recommended - A Course in Mathematical Statistics and Large Sample Theory, by Rabi Bhattacharya, Lizhen Lin and Vic Patrangenaru, Springer, Statistics Series. New York, USA, 2016. ISBN 978-1-4939-4032-5

Additional texts:

- A Course in large Sample Theory, by Thomas Fergusson. Publisher: CRC Press 1996
- Nonparametric Statistics on Manifolds and their Applications to Object Data Analysis, by Vic Patrangenaru and Leif Ellingson. ISBN-13: 9781439820506, ISBN-10: 1439820503 Publisher: CRC Press 2015

Prerequisite: STA 5327 or equivalent.

Course description: This course is concerned with statistical theory for convergence in distribution of random variables, laws of large numbers, central limit theorems, asymptotic distributions, asymptotic efficiency, rates of convergence, nonparametric confidence intervals, density estimation, asymptotic statistics on manifolds. The first part of the course we be concerned with foundational material from the recommended textbook from the following chapters:

- Ch. 6. Consistency and Asymptotic Distributions of Statistics.

- Ch. 7. Large Sample of Estimation in Parametric Models
- Ch. 8. Tests in Parametric and Nonparametric Models
- Ch. 9. The Nonparametric Bootstrap

For the second part, students are assume to work on limit theory related final exam projects, that will help them advance towards their PhD degree.

Attendance policy: Active attendance adds up to 5 bonus points. On the other hand, if you miss at least 3 times in a row, this extracredit is lost.

Grading: Assigned homework will be discussed in class or at office hours. The course grade will be calculated on the basis of one in class midterm exam and a final project (50% each). The midterm is scheduled for March 28. There will be no make ups.

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