

STAT 9710: Intro to Linear Stat Mod

2024 Spring

Course Overview. This is an advanced graduate course on theoretical statistics. Despite its name, this course is *not* about linear models. This is a mandatory course for first-year PhD students from the Statistics Department. It is also suitable for graduate students from AMCS, CIS, Math, and Biostatistics who are interested in the theory of statistics. Students are assumed to have taken undergraduate-level courses in calculus, linear algebra, probability, and statistics.

Lectures. Tuesday/Thursday 1:45pm–3:15pm (Location: SHDH 1201)

Instructor. Anderson Ye Zhang (ayz@wharton.upenn.edu)
Office Hours: Tuesday 3:15pm–4:15pm (Location: 427 ARB)

Teaching Assistant. Abhinav Chakraborty (abch@wharton.upenn.edu)
Office Hours: Thursday 4pm–5pm (Location: 312 ARB)

Course Website. <https://canvas.upenn.edu/courses/1772913>. Please check the Canvas site for announcements, assignments, solutions, lecture notes, and other course materials.

Topics in This Course: High-dimensional statistics and large-sample theory

- Stochastic Convergence
- Delta Method
- Concentration Inequalities
- Gaussian Sequence Model and Regression
- Minimax Lower Bound
- Uniform Law of Large Number
- Metric Entropy
- U Statistics
- M Estimators
- Testing

Textbook.

Asymptotic Statistics, A.W. van der Vaart. Cambridge University Press, 1998.

High-dimensional statistics: A non-asymptotic viewpoint, Martin J. Wainwright. Cambridge University Press, 2019.

Course Grading Policy:

- 4-6 Problem Sets
- Exams (in-class): The exam will be closed book, but you are allowed to bring your class notes with you. Laptops, computers, phones are not allowed.
 - 1st Exam (Feb 29, Thursday)
 - 2nd Exam (April 4, Thursday)
 - 3rd Exam (April 30, Tuesday)