Course goals:

Successful students:

1. will be familiar with modern ideas from high-dimensional probability.

2. will be able to apply these ideas to new problems.

3. will master rigorous proofs underlying these results, and will be able to adapt them to new settings.

Course format:

The course will have regular lectures and optional sections. Regular attendance to the lectures is strongly encouraged.

Typical enrollees:

Probability at the level of STAT 210, STAT 212 and real analysis at the level of MATH 112 are required. This is an advanced graduate course, so we will assume a certain degree of mathematical maturity.

When is course typically offered?

This course will be offered in the Fall semester.

What can students expect from you as an instructor?

I like to create an engaging classroom environment with open discussions. I welcome interruptions during lecture to clarify any doubts that might arise.

Assignments and grading:

The course grade will be based on Homeworks (approximately bi-weekly) and a final project. We will not have a final exam. Approximate grade contributions: Homeworks (60%)+ Project (40%).

Sample reading list:

1. Roman Vershynin, High-dimensional Probability, Cambridge University Press, 2019.

2. Ramon Van Handel, Probability in High-dimension, 2016.

3. Romain Couillet, Zhenyu Liao, Random Matrix Methods for Machine Learning, Cambridge University Press, 2022.

Enrollment cap, selection process, notification:

No enrollment cap for this class.

Tentative syllabus:

Here is a tentative syllabus for the class.

Absence and late work policies:

We strongly encourage regular attendance for the lectures. Students will have 2 late days for the homework submissions that they can use through the semester (without any prior approval).