

MATH-373 Probabilistic Combinatorics & Random Graphs

Spring 2022

Lecturer: Puck Rombach (*puck.rombach@uvm.edu*)

Prerequisites: MATH 251 or MATH 273

Texts: Online sources. See webpage.

Overview

The course will cover the following topics:

First/second moment methods, Markov, Chebyshev, Chernoff, Janson, martingales, Lovász Local Lemma, Branching processes and phase transitions in uniform random graphs, degrees/connectivity/subgraphs in random graphs, random geometric graphs and other models, random walks,...

Homework

Homework is incorporated in the lecture notes which are posted by Tuesday (and may be updated again by Thursday), and due on the next Tuesday. You submit homework by choosing a set of the exercises from the current week, typing out your answers in Latex, and submitting them as a PDF on BlackBoard. Questions are worth a variable number of points (indicated in the margin) and you should submit at least 5 points worth.

Attendance

Attendance is important for you to be successful in this course. Please attend all lectures if possible and let me know when you will be absent.

Office Hours and Appointments

There will be regularly scheduled office hours, but I am available for drop-ins or appointments outside of office hours as well, depending on my schedule. I want you to do well in this class and checking in with me early can make a big difference. This is a small class so I hope to chat regularly with all of you.

Flexibility and accommodations

If you cannot make a deadline due to health or personal reasons, just ask and I'll give you an extension, no questions asked. If you encounter continuing barriers, please let me know as soon as possible, so that we can determine if there is a design adjustment that can be made or if an accommodation might be needed. I am always happy to consider creative solutions as long as they do not compromise the intent of the assessment or learning activity. I welcome feedback that will assist me in improving the usability and experience for all students.

Grading

Grades are determined as follows. Each of the 15 Homework sets is worth 1 point if completed satisfactorily (with only minor comments from the grader). At the end of the semester, 10 points are worth an A and 7 points a B.