

## Undergraduate Seminar Spring 2021 Syllabus

This section of Undergraduate Seminar will closely follow *The Probabilistic Method* by Alon and Spencer (which can be found for free online). This book uses probability to prove theorems in combinatorics. Required background will be a basic understanding of probability, for instance, random variables, expectation, independence, conditioning, etc. The class will meet for 2 hours each week.

Students will be expected to give talks in the seminar and attend other students' talks. The number of talks each student gives will be determined by enrollment, with one student presenting per week. Our rough goal will be to cover one chapter of the book per week, however we may slow that pace as the difficulty increases.

Grading is based on both talks given and attendance according to the following expectations:

### Seminar Talks

- Students should have prepared the material assigned to them (or discussed with me in advance if there is too much material to get through in the talk).
- They should have some sort of visual aid to accompany the talks (i.e. slides or notes. If using a tablet, slides are not necessary but the student should have prepared some outline for the talk in advance). Equations in slides should be LaTeXed so that they are readable (if you have never used LaTeX before I am more than happy to help you set it up!)
- Students should prepare and include 1-2 exercises in the talks if there is time.
- The talk should roughly fill the 2 hour block, with time for question and answer (this can be tricky so there will be some leeway, but try to prepare extra exercises in case the talk is much shorter than expected).
- We will be discussing a number of combinatorial concepts, which are great opportunities for examples and illustrations (often not provided in the book). Students should make an effort to incorporate these into the talks.

### Attendance

- Attendance is a crucial part of your participation in the seminar. You will spend more time as an audience member than giving your own talks. Therefore it is very important that you actually attend other students' talks, not just to keep up with the material, but also out of respect for your fellow students.
- Students are expected to attend all meetings and have their cameras on (it is very uncomfortable to give a lecture to a bunch of blank screens!)
- Absences must be excused in advance (barring special circumstances).
- Students will be allowed 1hr of "free" unexcused absence, after which they will go down  $\frac{1}{2}$  a letter grade for every 2hrs of class time missed unless excused (i.e. missing one 2 hour meeting will take a grade from a A+ to an A). This is cumulative, i.e. it will be counted if you are 30 minutes late to class 4 times.

Overall, my goals for this seminar is that everyone has fun and learns some interesting combinatorics! Everyone should feel comfortable asking questions (even sometimes during your own talks!) If you are confused, there is a good chance other people are too, so stopping for questions often helps make the seminar more understandable and enjoyable for everyone.