MATH 220: Introduction to Proof.

Textbook

Mathematical proofs, a transition to advanced mathematics, by G. Chartland, A. Polimeni, P. Zhang, Second or third edition.

(Approximate) course outline

The main aim of the course is to learn how write clear and correct mathematical proofs. In particular, this involves learning some of the language of mathematics, and also honing your precise reasoning skills. This course provides the gateway to more advanced mathematics. Tentatively, the course will cover the following topics: (chapter numbers refer to the textbook).

- Sets - definitions, set operations (chapter 1)

- Logic - logical connectives, quantifiers (chapter 2)

- Proofs - direct and contrapositive. (chapters 3 and 4)

- Equivalence relations (chapter 8)

- Functions - injective, surjective, bijective, inverses and compositions (chapter 9)

- Proofs - existence and contradiction (chapter 5)

- Induction (chapter 6)

- Cardinality of sets - finite sets and different types of infinite sets (chapter 10)

- Beginnings of real analysis - limits of sequences and series (chapter 12).

Exams and Marking

Your mark will be based on Weekly Homeworks (10%); Workshop Quizzes (approximately on the last class of alternating weeks starting Jan. 10; schedule will be announced) (5%); Two midterms (together 35%); Final Exam (50%).

1st midterm: Friday, February 5, 5-7pm.

2nd midterm: Friday, March 11, 5-7pm.

The two midterms will not overlap in the material covered. The final exam will cover the entire course. The midterms and the final exam will be common between all sections, and marked jointly.

Policies

Missing a midterm results in a score of 0, except with prior consent of the instructor or with a doctor's note. In these latter cases, you will be allowed to take a make-up midterm; dates and times of make-up midterms will be announced later. If you anticipate having a valid conflict with the announced midterm times, please inform your instructor as soon as possible. No extensions are possible.

If for any reason you have to miss the final exam, it is the university-wide policy that you need to apply for "standing deferred" status through your faculty. Missed finals are not handled by the instructors or the Mathematics Department.