Mathematics 220: Mathematical Proof

September -December, 2019

Sections and Instructors

- Section 101: MWF, 12:00pm-1:00pm, GEOG-147, Gregory Martin
- Section 102: MWF, 12:00pm-1:00pm, MATH-102, Seckin Demirbas
- Section 103: MWF, 10:00am-11:00am, LSK-460, Itay Londner
- Section 104: MWF, 3:00pm-4:00pm, LSK-460, Seckin Demirbas
- Section 105: MWF, 2:00pm-3:00pm, LSK-460, Rachel Ollivier
- Section 106: MWF, 2:00pm-3:00pm, BUCH-B315, Gregory Martin
- Section 107: TuTh, 9:30am-11:00am, LSK-460, Jingyi Chen
- Section 108: TuTh, 12:30pm-2:00pm, MATX-1100, Jingyi Chen

Prerequisites

- a score of 64% or higher in one of MATH 101, MATH 103, MATH 105, SCIE 001, or
- one of MATH 121, MATH 200, MATH 217, MATH 253, MATH 263.

Textbook

Book of Proof (3rd edition), by Richard Hammack
You can download the text for free from
`https://www.people.vcu.edu/~rhammack/BookOfProof/Main.pdf`

Breakdown of marks

- 15% Homework
- 25% Midterm exam
- 60% Final exam

Homework

- There will be one assignment posted weekly (unless otherwise specified). Each assignment is due on the following week usually on Fridays for Sections 101-106 and Thursdays for Sections 107-108.
- Late homework will not be accepted.
- Homework must be cleanly written and **stapled**. Using Latex to prepare your homework is recommended.
- Copying solutions from another student, from the web or from any other source, and turning them in as your own is a violation of the Academic Code.

Midterm Exam

- The midterm exam will be held in your usual class at your usual class time.
- It will be 50 minutes and closed-book.
- It will be held on October 16th (Wednesday) for Sections 101-106 and on October 17th (Thursday) for Sections 107-108.

Final Exam

The date, time and location will be announced close to the middle of the term. Make your travel plans after you know your exam dates.

Missed homework or midterm

- If a student misses a homework assignment or the midterm, that student shall provide a documented excuse otherwise a mark of zero will be entered for that piece of assessment.
- Examples of valid excuses are an illness which has been documented by a physician and/or Student Health Services, or an absence to play a varsity sport (your coach will provide you with a letter).
- A physician's note must specifically state that the student was medically unfit to write the missed assessment on the date of the exam. Absence of this exact information will result in a mark of 0.
- Your instructor should be notified within 48 hours of such an absence and appropriate documentation should be produced within 7 days. Failure to comply with these time limits will result in a mark of zero.
- There will be no make-up midterms or homework; the weight of the missed assessment will be transferred to the final examination.

Missed final exam

- You will need to present your situation to your faculty's Advising Office to be considered for a deferred exam.
- See the Calendar for detailed regulations.
- Your performance in a course up to the exam is taken into consideration in granting a deferred exam status (for instance, failing badly normally means you will not be granted a deferred exam).

University Policies

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available on `https://senate.ubc.ca/policies-resources-support-student-success`.

Syllabus

The main aim of the course is to learn how write clear and correct mathematical proofs. It provides the gateway to more advanced mathematics. Following the textbook, we will cover, in the order given below,

- Sets and basic definitions: 1.1
- Logic: 2.1, 2.2, 2.3
- Proofs: 4.1, 4.2, 4.3, 4.4, 4.5
- Logic: 2.4, 2.5, 2.6
- Contrapositive Proof: 5.1, 5.2, 5.3
- Logic: 2.7, 2.8, 2.10
- Proving non-conditional statements: 7.1, 7.2, 7.3, 7.4
- Disproof: 9.1, 9.2, 9.3
- Mathematical Induction: 10.1 and 10.3
- Sets: 1.3, 1.4, 1.5, 1.6, 1.7
- Proofs involving sets: 8.1, 8.2, 8.3
- Sets: 1.2
- Relations: 11.1, 11.2, 11.3, 11.4, 11.5
- Functions: Chapter 12
- Proof by contradiction: Chapter 6
- Cardinality: Chapter 14