

COURSE INFORMATION: MATH 2233 – Group Theory (Winter 2004)

The goal of this course is to introduce *groups*, an abstract algebraic structure. We will learn the basic language of groups, as well as some of the fundamental theorems that describe the structure of groups. The other aim of this is to improve our ability to write mathematical proofs.

Time	MWF 4:30-5:30
Place	Ryan Building 1024
Instructor	Adam Van Tuyl Office: RB 2015 Office Hours: TBA
Text	<i>Abstract Algebra: An Introduction</i> by T. Hungerford (2nd Edition)
Email	avantuyl@sleet.lakeheadu.ca

Contact Information. The best way to get a hold of me is via email. Because the class is small, I will contact class members via email if there is news or changes.

Outline. We will cover the following sections of Hungerford's book:

- Chapter 7 - Groups
- Chapter 8 - Topics in Group Theory
- Chapter 11- Galois Theory (if time)

We will cover every section of Chapters 7-8. I expect you to read over each section before you attend class.

The evaluation is composed of two components.

1. **Homework (40%)** A homework assignment will be given out every week on Friday. It will be due the following Friday at the end of class. All of the homework questions (with some possible exceptions) will be taken from the text book. The text book divides questions into two types of problems:

Type A.

These exercises review the concepts and definitions introduced in the section. Type A exercises will be marked out of 2 points as follows:

- 2 pts Near perfect or perfect solution. A near perfect solution is a solution that is correct up to the final stage with possible mistake or sign error at the last step.
- 1 pt The solution shows some of the needed ideas, but fails to have the final solution.
- 0 pts Little or no progress is made toward the solution.

Type B.

These exercise usually involve proving statements using the results and concepts of the corresponding section. The majority of problems assigned will be Type B exercises. These exercises will also be graded on how the proof has been written. These problems will be graded out of 5 points as follows:

- 5 pts A correct solution and a well written proof.
- 4 pts Most of the required ingredients are present, but there are a few technical problems with the solution.
- 3 pts Some of the needed ideas are present. However, the solution either lacks the final conclusion or has some problems in the exposition.

- 2 pts The proof has at most one or two of the needed ideas and/or the proof is poorly written.
- 1 pt An attempt to the solution has been made, but there is a major flaw in the logic of the proof, or the proof is not well written.
- 0 pts Little or no progress is made toward the solution.

A Type B exercise that receives a mark of 4 or less can be rewritten and submitted for a new grade. This can be done at anytime (until the last day of class) and at most two times for any specific problem. If you resubmit an assignment for a new grade, please include the original assignment.

Homework Presentation: All homework should conform to the style introduced in Ring Theory. Specifically,

- Always write out the question before giving the proof or answer.
- Use only one side of the paper, and write on every other line. This will give me plenty of room to write comments.
- Homework must always be stapled together, and must include your name and homework assignment number.

Homework will have 5 points deducted for every day (weekday) that it is late, and if any of the above style guidelines are not met.

Because of the size of the class, I may assign more questions than I grade.

2. **Exams (Midterm 20%, Final Exam 40%)** There will be one test and a final exam. I will give more details about the tests nearer to the test dates.

Class Policies. Though attendance is not mandatory, I would appreciate the fact that you show up on time if you do decide to come to class.

Exams and tests must be taken on the date assigned (except if there are medical or family emergencies).

Important Dates.

Jan. 5 – Classes Begin

Feb. 16-20 – Reading Break

Feb. 25 – Midterm

April 2 – Classes End