

PMath 336 – Fall 2018
Introduction to Group Theory with Applications

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Office hours: Tuesday 1:30pm-3:00pm
Wednesday 9:30am-11:00am
or by appointment

Class Time and Place: M/W/F - 4:30-5:20 PM in MC 4064.

Marking Scheme: The marking scheme for the course will be as follows:

Assignments	30%
Quizzes	10%
Midterm	20%
Final Exam	40%

This scheme may be adjusted for exceptional cases at my discretion.

Topics: We will aim to cover the following topics in order. Keep in mind this is *not* set in stone (just in paper).

- **Group Theory Basics:** Examples, Axioms, Subgroups and Lagrange's Theorem, Cyclic groups, Permutation groups, Normal subgroups, quotients, homomorphisms, Isomorphism theorems, automorphism groups and conjugation.
- **Group Actions:** The orbit-stabiliser theorem, Cauchy's theorem, Burnside's lemma, the class equation.
- **Other Exciting Topics:** Classification of finite abelian groups, Finitely-generated abelian groups, solvable groups or whatever else comes to mind.

Textbook: I will be posting lecture notes to the course website (on LEARN), which will be updated as the course progresses. For those who want some supplementary reading and exercises, the material can also be found in

- *Contemporary Abstract Algebra* by Joe Gallian (an excellent book for first course)
- *Abstract Algebra* by Dummit/Foote (a comprehensive reference containing much more material than the course material)

It is not necessary to have these books, but a copy of each has been put on reserve in the DC library. However if you attend the lectures and read the lecture notes carefully and of course solve problems along with, that will be sufficient for a good standing in the course.

Homework Assignments: There will be 5 assignments, each worth 6% of your total grade. They are due on the following dates:

Assignment 1	Wednesday, September 26
Assignment 2	Friday, October 12
Assignment 3	Monday, November 5
Assignment 4	Monday, November 19
Assignment 5	Friday, November 30

Late assignments will not be marked and will receive a mark of 0.

Collaboration is encouraged—after all, that's how professional mathematicians get work done. But make an honest attempt to understand how to solve the problems! If you don't do the assignments yourself, it will show on the final.

Quizzes: There will be 5 quizzes, each worth 2% of your total grade. They will be 10-15 minutes long and will take place at the beginning of class on the following dates:

Quiz 1 Wednesday, September 19

Quiz 2 Wednesday, October 3

Quiz 3 Monday, October 29

Quiz 4 Wednesday, November 14

Quiz 5 Monday, November 26

Midterms: There will be an in-class midterm (i.e., during the class timings) on **Monday, October 22** from **4:30-5:30 PM**

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check www.uwaterloo.ca/academicintegrity/ for more information.]

Grievance: A student who believes that a decision affecting some aspect of his or her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity [check www.uwaterloo.ca/academicintegrity/] to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline, www.adm.uwaterloo.ca/infosec/Policies/policy71.htm. For typical penalties check Guidelines for the Assessment of Penalties, <http://www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm>.

Appeals: A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm.

Note for Students with Disabilities: AccessAbility Services, located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.