

CARLETON UNIVERSITY
SCHOOL OF MATHEMATICS AND STATISTICS

MATH 3106 Group Theory Fall 2020

Preliminary COURSE OUTLINE, subject to change

Objectives of the course: this course is an advanced course in abstract algebra, with focus on the group theory.

Course Instructor: Dr. Inna Bumagin

- **Email:** inna.bumagin AT carleton.ca
- **Office hours:** by appointment.

Textbook:

- Algebra, by Michael Artin, 2nd edition.

Recommended Textbooks:

- Abstract Algebra, by Dummit and Foote, 3rd edition, Wiley,
- Introduction to Algebra, by Kostrikin and Koblitz,
- Introduction to Abstract Algebra, by Keith W. Nicholson.

TOPICS:

- Review: permutations, cyclic groups, Lagrange's theorem, normal subgroups,
- Group homomorphisms, Isomorphism Theorems,
- Group Actions on Sets,
- Sylow Theorems,
- Abelian groups.

The following classes of groups will be considered: cyclic groups, Abelian groups, groups of permutations, groups of matrices, integers modulo n, dihedral groups, and solvable groups.

Prerequisites: MATH 2100 with a grade of C- or higher; or (MATH 2108 or MATH 3101 with a grade of B or higher; and MATH 1800 with a grade of B or higher; and permission of the instructor); or permission of the School.

Lectures: Monday and Wednesday 11:30 - 13:00. Lectures begin on September 9 (Wednesday) and end on December 11 (Friday, classes follow a Monday schedule).

Tutorials: Thursday 16:30 - 17:30. Tutorials begin on **September 10** and end on December 10.

Both lectures and tutorials are mandatory.

EVALUATION. Your final grade for the course will consist of

- (1) **Attendance and participation 30%**
- (2) **Homework assignments 20%**
- (3) **Tests 20%**
- (4) **Final Examination 30%.**

Attendance will be taken in every class and every tutorial. The class time slots will be mostly dedicated to discussions of the course material. Your **participation**, via asking or answering questions, or sharing your understanding, should show the effort you put into this course.

Note: you must obtain **at least 50% of total and at least 50% of the Attendance and participation mark** to pass the course.

There will be **weekly homework written assignments, due before the tutorials.** In tutorials, on a regular basis, you will be asked to present your solutions. Some of the homework will be graded.

You are welcome to collaborate with other students from class on the homework, but please indicate clearly the names of other students you collaborated with and write your solutions separately. Getting help from anyone who is not a participant in this class is strongly discouraged.

There will be **three or four 50 minute open book tests** during class time. The first test is scheduled for Monday September 28.

Final Examination is a 3-hour open book exam scheduled by the University. The exam is taking place during the period of December 12-23, 2020.

In all of your solutions, including the final exam, the tests and the homework assignments, you should **give precise references to the relevant statements from the posted course notes**, including the statement number. Marks will be deducted if precise references are not given.

You will be asked to submit the following **hand written honor pledge** with each test solution and with your final exam solution: *I have neither given nor received unauthorized assistance during the completion of this work.* Solutions submitted without the honor pledge will not be graded.

Academic Integrity. The University states unequivocally that it demands academic integrity from all its members. Academic dishonesty, in whatever form is ultimately destructive to the values of the University. Students who violate the principles of academic integrity through dishonest practices undermine the value of the Carleton degree. Dishonesty in scholarly activity cannot be tolerated. Any student who violates the standards of academic integrity will be subject to appropriate sanctions.

Academic Accommodation

Carleton University has suspended the need for a doctor's note or medical certificate until further notice when requesting academic accommodation related to COVID-19.

Students should complete the self-declaration form available on the Registrar's Office website to request academic accommodation for missed course work including exams and assignments.

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: <http://www2.carleton.ca/equity/>

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: <http://www2.carleton.ca/equity/>

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable) at <http://www2.carleton.ca/pmc/new-and-current-students/dates-and-deadlines/> You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at <http://www2.carleton.ca/equity/>