

MATH 4106/5106 Group Theory Winter 2012

COURSE OUTLINE

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

Course Instructor: Dr. Inna Bumagin

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- **Office hours:** Thursday 1-2 pm or by appointment.
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TOPICS:

- solvable groups,
- nilpotent groups,
- finitely generated abelian groups,
- finitely generated free non-abelian groups and group presentations,
- subgroups of free groups.

If time permits, we shall also discuss some of the following topics: braid groups, self-similar groups, algorithmic problems in groups and applications of the infinite group theory to cryptography.

TEXTS: There is no unique textbook which would be followed. Some of the topics, that we are going to cover, can be found in the following texts:

- The theory of groups, by M. Hall,
- A course in the theory of groups, by D. Robinson,
- An introduction to the theory of groups, by J. Rotman,
- Abstract Algebra, by Dummit and Foote, 3rd edition,
- Combinatorial Group Theory, by R. Lyndon and P. Schupp,
- Combinatorial group theory; presentations of groups in terms of generators and relations, by W. Magnus, A. Karrass and D. Solitar.

Prerequisites: some basic knowledge of the group theory; MATH 2100 should suffice but, the more you know about groups and proofs the better.

Lectures: Tuesday and Thursday 2:30 - 4:00 pm, room SA 308. Lectures begin on January 5th (Thursday) and end on April 5th (Thursday).

EVALUATION. Your final grade for the course will consist of

- (1) **Term Mark 50%**
- (2) **Final Examination 50%.**

There will be an **80-minute midterm test** tentatively scheduled for Thursday February 9th, during class. The test is worth 20%. There are no make-up tests.

There will be **four homework assignments**, worth 30%.

Final Examination is a 3-hour exam scheduled by the University. The exam is taking place during the period of April 11-24, 2012.

Academic Accommodation

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 see the Student Guide

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 see the Student Guide

Students with disabilities requiring academic accommodations in this course must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented disabilities could include but are not limited to mobility/physical impairments, specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic medical conditions. Registered PMC students are required to contact the PMC, 613-520-6608, every term to ensure that I receive your Letter of Accommodation, no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you only require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the deadlines published on the PMC website (also, see below).

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.