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CARLETON UNIVERSITY

SCHOOL OF MATHEMATICS AND STATISTICS
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MATH 4106/5106   Topics in Group Theory   Winter 2022

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Preliminary COURSE OUTLINE
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This course is a very gentle introduction to the theory of infinite groups. We begin with familiar algebraic techniques and gradually introduce tools of geometric nature. We continue to study infinite groups by looking at their 'nice' isometric actions on 'nice' metric spaces.

TOPICS depend on the interests of the audience, and **include**
- Infinite Abelian groups,
- Free groups,
- Group presentations,
- Cayley graphs of groups,
- Groups acting on trees,
- Algorithmic problems in groups,...

Recommended Reading:
- *Groups, Graphs and Trees*, by John Meier,

- *Introduction to Group Theory*, by Oleg Bogopolski,

- *Office Hours with a Geometric Group Theorist*, edited by M. Clay and D. Margalit.

Lectures: Tuesday and Thursday 11:30 am - 1:00 pm, a combination of on-line and in-person meetings. When in person, the room is Nicol Building 3040. If you miss a lecture, you will need to read a text or lecture notes. Lectures begin on January 11 (Tuesday) and end on April 12 (Tuesday).

Evaluation. Your final grade for the course will consist of
1. **Assignments 20%**
2. **Presentations 50%**
3. **Take-home Final Examination 30%**

Prerequisites: MATH 2100 or MATH 2108 should suffice in terms of the required background knowledge. However, the more you know about groups and about proofs the better.

Course Instructor: Dr. Inna Bumagin
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