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## University of Ottawa

## MAT4343/MAT5148: Representation Theory

Summer 2010

Instructor: Erhard Neher, Department of Mathematics & Statistics, 585 King Edward, office 207C, email: neher@uottawa.ca

**Regular Office hours:** Tuesday, 1:30-3pm (preliminary), or by appointment. I will also answer questions immediately after class on Monday. If it is not possible to see me during my office hours, please talk to me after class or send me an email to set up an appointment.

Lectures: Monday and Wednesday, 13:30–15:30 in KED B004.

**Prerequisites:** MAT2143 and MAT3141 for MAT4343; two algebra related courses at the graduate level or permission of the instructor.

**Textbook:** William Fulton and Joe Harris, *Representation Theory - A First Course*, Graduate Texts in Mathematics 129, Springer-Verlag 1991. Information about additional useful books will be given in class.

Course plan: We will follow the official course description of MAT4343, which is

Complex-valued representations of finite and compact groups. Character theory, orthogonality relations, group rings. Induced representations. Additional topics chosen from the representations of Lie groups and Lie algebras.

In the textbook, these are approximately the sections 1-4, 6, 8-15.

Midterm: There will be a midterm, scheduled for

## Wednesday, June 16, 13:30-15:30.

The midterm as well as the final exam will be closed-book exams. The midterm exam cannot be written at another time. If the midterm is missed for a valid reason, approved by me, the weight of the midterm (25%) will be shifted to the final exam.

**Homework:** There will be weekly homework assignments, to be handed in on Wednesday, 13:30, *before the class starts.* Students taking the graduate version of the course will be assigned extra reading material and exercises taken from the textbook.

Final Grade: If the grade of the final exam is less than 45% then the final grade = grade of final exam, i.e., F if the grade of the final exam is less than 40% or E if the grade of the final exam lies between 40% and 45%. If the grade of the final exam is at least 45%, then the final grade will be calculated as follows: 20% homework + 25% midterm + 55% final.

Final exam: Monday, July 19, 13-17, SMD 428.

Books on reserve for this course in Morisset library:

- W. Fulton and J. Harris, Representation Theory a first course, QA 1 G67 v.129 1991.
- J. Humphreys, Introduction to Lie algebras and representation theory, QA 1.G67 v.9 1972.
- J. P. Serre, Linear representations of finite groups, QA 1.G67 v.42 1977.