

# INTRODUCTION TO REPRESENTATION THEORY

## Math 375, Fall 2016

**Meeting Time and Location:**

Lecture: MWF 2:00-2:50pm, SMUD 204

Discussion: Th 2:30-3:20pm, SMUD 204

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**Course Webpage:** <http://ynaqvi.people.amherst.edu/math375fa16/>

**Prerequisites:** MATH 350, or equivalent Abstract Algebra course

**Textbook:** There is no required textbook for this class. However, we will be studying material that can be found in the following sources:

*Representations and Characters of Groups* (2nd Ed.) by James and Liebeck (ISBN: 9780521812054)

*Introduction to Lie Algebras* by Erdmann and Wildon (ISBN: 9781846280405)

These books are available as e-reserves on Moodle. In addition, the following references (also on reserve) may be useful as well:

*Linear Representations of Finite Groups* by Jean-Pierre Serre (ISBN: 9780521812054)

*Lie Groups, Lie Algebras, and Representations* by Brian C. Hall (ISBN: 9783319134666)

**Course topics:** This course is an introduction to the representation theory of groups, and builds on the material covered in Math 350: Groups, Rings and Fields. In this class, we will study group actions, representations and modules, subrepresentations and homomorphisms, irreducibility, characters and character tables, and induced and restricted representations. In addition, you will have the opportunity to explore other topics of interest for your final projects.

**Homework:** Homework will be assigned weekly. Refer to the course website for assignments and their due dates. Written homework must be handed in at the beginning of the class in which they are due, and late homework will not be accepted for grading. Submitted work should be neat, organized, and stapled, and will be graded for both correctness and clarity of writing.

While you are strongly encouraged to work in groups, all submitted assignments must consist only of your own work, *written in your own words*. If you work with other students, you should include a note at the top of your homework saying who you worked with.

**Absences:** You are expected to attend every class and arrive on time for class. An absence due to emergency may be excused, provided that you can supply acceptable written evidence if required, and that you notify me *as soon as possible*. Two late arrivals will be treated as an absence. Students with more than four unexcused absences may have their grade lowered by one step (for example, a B- may be lowered to a C+).

**Exams:** There will be two midterm exams for this course. All exams must be taken at the scheduled time. Make-up exams will only be allowed if you can supply *acceptable* written evidence, and that you notify me *before the end of the missed exam*.

There is no final exam for this course. Instead, there will be a final project for this class consisting of a written paper and an in-class presentation.

**Grading:** Your overall grade will be determined using the following point distribution:

Homework	100
1st Midterm Exam	125
2nd Midterm Exam	125
Final Project	150
Total	500

**About the Statement of Intellectual Responsibility:** While you are strongly encouraged to work on homework problems in groups, the work you write up and hand in must be your own. If you receive help from an outside source, please include a note in your homework specifying what this was. For exams, you are not permitted to work with other students or use any unauthorized aids such as calculators, notes, formula sheets, etc. If you are unsure about whether something is allowed or not, please speak with me and I would be happy to clarify.

Failure to comply with the above guidelines on homework will result in a 0 for the assignment. Cheating on an exam or final project will result in an F for the course. All incidents will be reported to your class dean.