Lie Groups and Lie Algebras – Math 70220; Spr 2025
Course Information

Times: MWF 10:30 - 11:20am **Location:** DBRT 202

Textbook: *Introduction to Lie Algebras and Representation Theory*, by J. Humphreys, Springer.

Professor: Katrina Barron **Office:** 276C Hurley **Email:** kbarron@nd.edu

Course Webpage: http://www3.nd.edu/∼kbarron/Math70220.html

Course Description: The main objective of this course is to obtain an understanding of the basics of Lie Theory including the classification of finite dimensional simple Lie algebras and some basic representation theory. We plan to cover much of the material in Chapters I–III of the textbook with possible variations on depth and/or additional topics as time permits.

Homework, exams, and grading: Your course grade will be based on your total score out of 450 possible points, allocated as follows:

- *Homework:* There will be homework assigned approximately bi-weekly. It will be worth 100 points of the total 450 points of your grade.
- *Midterm Exams:* There will be two one-hour Midterm Exams, each worth 100 points. These will take place sometime during the week of February 17th for the first Midterm, and during the week of March 31st for the second Midterm.
- *Final exam:* The Final Exam will be held sometime during Finals Week, May 5–9, and will be worth 150 points out of the total 450 points of your grade.
- *Class attendance and participation:* It is important for you to attend class and you are expected to participate by answering questions and asking questions. Absences must be excused by contacting Prof. Barron either before the absence or as soon afterward as possible with a reason for the absence.

Homework Logistics: The homework problems will be assigned as we go along, and it is important to attempt the problems shortly after they are assigned.

I encourage you to collaborate with each other on the homework and on understanding the course material. However, in writing up your homework, the work must be yours; that is, it might have arisen in conjunction with discussions and work with your colleagues, but you must write up the final solution yourself as you understand it, and may not simply copy others work if you did not contribute to its development or do not fully understand it yourself.

Honor Code: The homework and all exams are conducted under the honor code. Exams are closed book and are to be done completely by yourself with no assistance from others. Although collaboration on homework is encouraged, directly copying the work of others without contributing to working out the solution or fully understanding the work would constitute an infringement of the honor code. You are encouraged to attribute help from your fellow students on your homework by citing them, e.g. "Rosalie was invaluable in helping me understand how to solve this problem," or "I thank Thomas for collaborating on finding a solution to this exercise." You will still receive full credit for the problem yourself (if correct), but it is good to get in the habit of acknowledging your collaborators in your mathematical work.