

# Lie Groups (MATH744)

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| **Term: Spring 2025**  **Professor: William Goldman**  **Office: 3106 Kirwan Hall**  **Email:** [**wmg@umd.edu**](mailto:wmg@umd.edu)  **Office Hours: Tuesday 2:00-3:15 or by appointment**  **Course Time: Tuesday-Thursday 12:30-1:45**  **Classroom: B0427 Kirwan Hall (Mathematics building)**  **Course Assistant: Jacob Erickson**  **Email:** [jwericks@](mailto:gsangsto@umd.edu)**[u](mailto:gsangsto@umd.edu)md.edu**  **Textbook:** |  |

## Course Description

Topics from projective geometry and transformation geometry, emphasizing the two-dimensional representation of three-dimensional objects and objects moving about in the plane and space. The emphasis will be on formulas and algorithms of immediate use in computer graphics.

## Required Resources

* Course Website: [elms.umd.edu](http://www.elms.umd.edu/)
* Book: Structure and Geometry of Lie Groups, by Joachim Hilgert and Karl-Hermann Neeb,

ISSN 1439-7382 Springer Monographs in Mathematics

ISBN 978-0-387-84793-1, e-ISBN 978-0-387-84794-0,

DOI 10.1007/978-0-387-84794-8

* **Prerequisites:**1 course with a minimum grade of C- from (MATH461, MATH240, MATH341).

**Course Guidelines**

**Communication with Instructor:** If you need to reach out and communicate with me, please email me at wmg@umd.edu. Please DO NOT email me with questions that are easily found in the syllabus or on ELMS (i.e. When is this assignment due? How much is it worth? etc.) but please DO reach out about personal, academic, and intellectual concerns/questions. I will do my best to respond to emails within 48 hours. I will send IMPORTANT announcements via ELMS messaging. You must make sure that your email & announcement notifications (including changes in assignments and/or due dates) are enabled in ELMS so you do not miss any messages. You are responsible for checking your email and Canvas/ELMS inbox with regular frequency. Thanks!

**Grading Structure**

The grades will be based homework sets, announced in class and on ELMS, and one take-home final.

The homework will be 75% of the grade and the final 25%. If there is interest (and time) for in-class

Presentations, those can be factored into the final grade for the course.

Students are encouraged to work in groups, but please indicate with whom you’re working on your submissions. Extensions are discouraged, but permitted in exceptional cases (after the instructor and assistant have been contacted). Although attendance will not be taken, students are expected to attend class.

In addition, students are encouraged to prepare in-class presentations if they so desire and there is time.

All assessment scores will be posted on the course ELMS page. If you would like to review any of your grades, please email me to schedule a time for us to meet and discuss.

### Academic Integrity

It is important to note that course assistance websites, such as CourseHero, or AI generated content are not permitted sources, unless the instructor explicitly gives permission. Material taken or copied from these sites can be deemed unauthorized material and a violation of academic integrity. These sites offer information that might be inaccurate or biased and most importantly, relying on restricted sources will hamper your learning process, particularly the critical thinking steps necessary for college-level assignments.

Additionally, students may naturally choose to use online forums for course-wide discussions (e.g., Group lists or chats) to discuss concepts in the course.

Finally, on each exam or assignment you must write out and sign the following pledge: ***"I pledge on my honor that I have not given or received any unauthorized assistance on this exam/assignment."*** If you ever feel pressured to comply with someone else’s academic integrity violation, please reach out to me straight away. Also, ***if you are ever unclear*** about acceptable levels of collaboration, ***please ask***!