Math 3550: Lie theory (Algebraic groups)

Class Times: MW 3:00 - 4:15PM (227 Benedum Hall)

Professor: Bogdan Ion, *email*: bion@pitt.edu, *office*: 423 Thackeray Hall, *phone*: 624-8343.

Office Hours: TuTh 3:00–4:00PM or by appointment in 423 Thackeray Hall.

Suggested resources:

1. A. Borel, Linear Algebraic Groups. 2nd edition. GTM 126, Springer 1991.
2. J. Humphreys, Linear Algebraic Groups. GTM 21, Springer 1975.
3. T. Springer, Linear Algebraic Groups. 2nd edition. Progress in Mathematics 9, Birkhäuser 1998.
4. A. Kleshchev, Lectures on Algebraic Groups.

Web Site: Announcements will also be posted at **http://sites.pitt.edu/~bion/3550.html**

Prerequisites: Basic familiarity with ring theory and category theory. Some background in classical algebraic geometry at introductory graduate level is encouraged.

Course description: The course is an introduction to linear algebraic groups with an emphasis on the structure and classification of semisimple algebraic groups over an algebraically closed field. Highlights of the course include theorems of Borel, Chevalley, Grothendieck, Kolchin, Tannaka, Tits.

Grading Policy: The final grade will be computed from the following

Homework	50%
Final Project	50%

The grades will **not be curved**. *Roughly*, the following grading scale will apply:

A: 90-100, B: 80-90, C: 70-80, D: 55-70.

The homework will consist of 5-6 more substantial assignments which will have to be turned in on dates to be specified in class. Late homework is not accepted. In order to be graded all writings must be coherent, legible and submitted in the following format:

1. Do the problems on 8.5"x11" paper in the assigned order, writing only on one side of each sheet - with the assignment and your name written at the top of the first page.

2. For each assigned problem, first state or copy the problem precisely as given in the text, then give its solution. No credit is given for a solution to a misstated assigned problem.

3. Write effectively, with due attention to organization and logical progression of ideas. Each solution should be complete and appropriately supported - by relevant observations, argumentation, drawings etc. - but direct and to the point. The paper should be easily readable by your peers.

Final project: The final project is devoted to the development of a mathematical topic that you will have to choose in consultation with me. The length of the final document will likely fall within 7-10 pages. The paper will consist of the mathematical exposition of one or several important results relevant to the chosen topic and will be similar in style and content to a section of the textbook. Precise references will be indicated. Please start thinking and discussing with me a possible topic within the first month of classes and report back regularly on the progress of the manuscript. Keep in mind that to produce a quality product several revisions might be necessary so please plan accordingly.

Other Important dates:

Labor Day	Monday, September 1
Last day to add/drop classes	Friday, September 5
Last day to submit monitored withdrawal forms	Friday, October 24
Thanksgiving Break	Monday – Friday, November 24–28
Last Class	Wednesday, December 5

Accommodations and schedule conflicts:

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both me and Disability Resources and Services, 216 William Pitt Union, (412)648-7890/(412)383-7355 (TTY), before the end of the second week of classes. Similarly, students who have any conflicts (including religious observances) with the scheduled examination dates should notify me before the end of the second week of classes.

University of Pittsburgh e-mail Policy 09-10-01:

Each student is issued a University e-mail address (username@pitt.edu) upon admittance. This e-mail address may be used by the University for official communication with students. Students are expected to read e-mail sent to this account on a regular basis. Failure to read and react to University communications in a timely manner does not absolve the student from knowing and complying with the content of the communications. The University provides an e-mail forwarding service that allows students to read their e-mail via other service providers (e.g., Hotmail, AOL, Yahoo). Students that choose to forward their e-mail from their pitt.edu address to another address do so at their own risk. If e-mail is lost as a result of forwarding, it does not absolve the student from responding to official communications sent to their University e-mail address. The link to this policy is located at: **http://www.bc.pitt.edu/policies/policy/09/09-10-01.html**. Instructions on how to forward e-mail messages are at: **http://www.technology.pitt.edu/email-accounts/email/imap/imap-forward.html**