

Abstract Algebra

Math 8220 Section 15, CRN-87795, Fall 2008

Instructor: Florian Enescu
Classroom: 406 Classroom South **Class timings:** Tu Th 4:00 – 5:15 pm
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Office: 758 COE **Phone:** (404) 413 - 6442
Office Hours: Monday 4-5pm Wednesday 9-10am and by appointment.

Recommended textbook:

Basic abstract algebra, 2nd edition
by P. B. Bhattacharya, S. K. Jain, S. R. Nagpaul, ISBN 0-521-46629-6.

We will cover most of chapters 15, 16, 17, 18, and possibly 6, 7, 8.

Other recommended texts:

D. Dummit and R. Foote, Abstract Algebra, Wiley, (list price: 147.16)
S. Lang, Algebra, Springer Verlag (list price : \$ 74.95)
T. Hungerford, Algebra, Springer Verlag (list price: \$ 54.95)
M. Artin Algebra, Prentice Hall (list price: \$ 114.40)
E. Artin, Galois theory, Dover (list price: \$ 7.95)
P. J. McCarthy, Algebraic extensions of fields, Dover (list price: \$ 8.95)
J. Milne, Lecture notes on Galois Theory, at <http://www.jmilne.org/math/index.html>

Course content/outcome: The course offers a solid introduction in graduate level algebra. The topic presented is Galois Theory, one of the most concrete applications of modern algebra. The theory was developed by Evariste Galois in the nineteenth century, but its present form has developed in time with contributions from Steinitz and E. Artin at the beginning of the twentieth century.

We will discuss field and Galois theory including splitting fields, algebraically closed fields, separable extensions, the fundamental theorem of Galois theory, finite fields, the Galois group of polynomials, insolvability of the quintic.

The last part of the course will be devoted to a crucial chapter in the theory of groups: actions on groups and Sylow Theorems. This topic has important applications to the classification of finite groups and hence ties naturally to Galois theory.

Prerequisites: MATH 4442/6442 with a grade of C or higher. During the first two weeks of the semester the Department of Mathematics and Statistics checks the computer records to determine whether or not each student has met the prerequisites for this course. If you do not have the prerequisites please so inform your instructor and change to another course right away. If our computer search finds that you do not have the prerequisite, you must drop the course or you will be dropped automatically. If you do not attend class during the first two weeks you will be administratively dropped.

Grading scheme for Math 8220:

Homework:	25 %	
Exam 1:	25 %	Thursday, October 9
Exam 2:	25 %	Thursday, November 6
Final exam:	25 %	Thursday, December 11, 2:45 pm

Homework: Regularly scheduled homework assignments will be provided (generally every seven to ten days). You can talk among yourselves about the problems assigned, however the work turned in has to be individually written.

Exams: There will be two exams and one in-class final exam. The final exam is comprehensive and required. The lowest score of the two midterm exams will be replaced by the final if advantageous to the student.

Using the above weights, letter grades will be assigned (roughly) as follows:

90–100 = A, 87–89 = B+, 80–86 = B, 77–79 = C+, 70–76 = C 60–69 = D
less than 60 = F.

Attendance: You are expected to attend regularly for the entire period of the class. That is, you are expected to arrive on time and stay for the duration of the class. Attendance will be taken periodically. After four or more absences a student can be dropped from this class. In case of an absence, the student is responsible for knowing all the material covered.

Important dates: Last day to drop a class: August 22, on GoSolar. A student that does not attend the first two weeks can be dropped by the instructor.

Last day to withdraw from term length classes and receive a *W*: October 1. Last day to withdraw from term length classes and receive a

Disruptive behavior: Any disruptive behavior will be handled according to the University's policy on disruptive behavior (<http://www.gsu.edu/~wwwsen/minutes/2002-2003/disrupt.html>). This includes the possibility of withdrawing the student from the class.

Academic honesty: Academic honesty is expected from any student. Cheating will not be tolerated and handles according to the University's policy on academic honesty (http://www.gsu.edu/~wwwdos/codeofconduct_conpol.html) which includes academic as well as disciplinary penalties.

Changes: Any changes to the above syllabus will be announced in class. The course syllabus provides a general plan for the course; deviations might be necessary.