

# Modern Algebra I-Math 4441/6441, Section 5, CRN 80702/80710

## Fall 2011

**Instructor:** Florian Enescu  
**Classroom:** GCB 621      **Class timings:** M W 12:00 – 1:15 pm  
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**Office:** 758 COE      **Phone:** (404) 413 - 6442  
**Office hours:** 758 COE      T 1:30 -2:30 pm, Th 11am-12pm and by appointment  
**Recommended textbook(s):**

My lectures will represent the official material for the course.

I will structure them based upon

*A First Course in Abstract Algebra with Applications, 3rd edition*  
by J. J. Rotman, Pearson Prentice Hall, ISBN 0-13-186267-7.

We will cover most of chapters 1, 2 and part of 3 if possible.

There are other texts that can be used, such as the ones listed below.

The first is concise and to the point. The second goes slower and insists on simpler examples. The third is at intermediate level.

*Abstract algebra, 3rd edition*

by I. N. Herstein, John Wiley & S, ISBN 0-471-36879-2.

We will cover most of chapters 1–3 and possibly 4 from this text.

*A first course in abstract algebra, 7th edition*

by John B. Fraleigh, Addison Wesley, ISBN 0-201-76390-7.

We will cover most of chapters I–III, parts of chapter VII, and possibly IV.

*Basic Abstract Algebra, 2nd edition*

by Bhattacharya, Jain, Nagpaul, Cambridge University Press.

We will cover most of chapters 1, 2, 4, 5, 7 if possible.

**Course content/outcome:** The course offers a solid introduction to modern algebra covering basic concepts that are at the foundation of modern mathematics. The course will emphasize the understanding of the concepts, through examples and proof writing. The course will discuss the foundations of group theory: definitions, notion of subgroup, normal subgroups, Lagrange's theorem, cyclic groups, abelian groups, fundamental theorems of isomorphism for groups, permutation groups, Cauchy's theorem, and other topics if time permits. The students passing the course will be able to know the definitions of major concepts of the course, present the proofs of major results as well as apply them in the solving of routine exercises.

The students enrolled at graduate level we will have to show demonstrate a deeper understanding of the concepts presented with emphasis on theoretical aspects. This knowledge will be tested by extra problems in homework assignments and exams that will require more substantial written portions.

**Prerequisites:** MATH 3000 AND Math 3435 with a grade of C or higher.

**Homework:** There will be five homework assignments that will be graded. No late homework will be accepted. You can discuss the problems among yourselves, but the write-up of the solutions has to be done individually according to your own understanding. Identical assignments will not be graded. The assignments as well as the exams for Math 6441 will be more involved than the ones for Math 4441.

**Grading scheme for Math 4441/6441:**

|             |      |                                       |
|-------------|------|---------------------------------------|
| Homework:   | 25 % |                                       |
| Exam 1:     | 25 % | Wednesday, September 21               |
| Exam 2:     | 25 % | Wednesday, October 26                 |
| Final exam: | 25 % | Monday, December 12, 10:45 am-13:15pm |

**Exams:** There will be two midterm exams and one final. The final exam is comprehensive and required. Also, the final exam grade will replace the lowest grade of one (and only one) midterm exam in case the final exam grade is higher. No midterm exam grade will replace the final exam grade. Make-up exams will only be allowed for extreme emergencies that must be documented, such as medical emergencies. It is the instructor's role to determine if a specific emergency is a valid one.

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

97-100 = A+,      93-96 = A,      90-92 = A-,      87-89 = B+,      83-86 = B,      82-80 = 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. 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 26, 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 possibly receive a *W*: October 7, 2011.

**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](http://www.gsu.edu/~wwwdos/codeofconduct_conpol.html)) which includes academic as well as disciplinary penalties.

**Special accommodations:** Students who wish to request accommodation for a disability may do so by registering with the Office of Disability Services. Students may only be accommodated upon issuance by the Office of Disability Services of a signed Accommodation Plan and are responsible for providing a copy of that plan to instructors of all classes in which accommodations are sought.

**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.

**Webpage:** <http://www2.gsu.edu/~matfxe/currentclasses>