# MT-A411 Introduction to Abstract Algebra

Class ID, Time and Place: MT-A411-01, meeting at 1:10 p.m. in Ritter Hall 316 on Mon., Wed., Fri.
Text: Joseph A. Gallian, Contemporary Abstract Algebra (Fourth Edition), Houghton Mifflin, 1998.

Prerequisite: MT-A315 Introduction to Linear Algebra, or equivalent.

Instructor: Dr. Russell Blyth
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Office Hours: 10 – 10:50 a.m. Monday, 2 – 2:50 p.m. Wednesday,
10 – 10:50 a.m. Friday.
Walk-up at other times (if I am there), or by appointment.

| Syllabus: | | Approx. Hours |
|---|---|---|
| Part 1: | Integers and Equivalence Relations: Chapter 0 | <2 |
| Part 2: | Groups: Chapters 1 - 11 | 20 |
| Part 3: | Rings: Chapters 12 - 18 | 10 |
| Part 4: | Fields: Chapters 19 - 21 | 5 |
| | Tests and Leeway | 5 |
| TOTAL | | 42 |

Grading Policy

1. Homework. Problems will be assigned from the text at the end of each section. You will be required to hand in some of the problems. Homework will be handed in ten times during the semester. Half of these assignments will be done in pairs. 20%
2. Computer Exercises. To help build our understanding of groups, rings and fields, you will undertake computer exercises using GAP (and perhaps Maple). Sometimes we will spend part of a class period starting these exercises, but often you will need to complete them on your own time. 15%
3. Tests. The test questions will probe your understanding of the key concepts of modern algebra. Questions will typically require a combination of the use of theoretical results and computation, with some questions requiring creative thought. Some questions will be directly computational; others will be totally theoretical (that is, proofs). The type of problems asked will be similar to those on the homework. There will be three 50 minute tests, scheduled for Wednesday, September 26; Friday, October 26; and Wednesday, November 28. 39%
4. Final. Similar in nature to the tests, the Final will be comprehensive, although it will stress more heavily the material not yet covered in any of the tests. The Final is on Friday, December 14 from 12 noon to 1:50 p.m. **You must plan to be there!** 26%

100%

(No-)Make-up Policy: Late homework or lab reports will not be accepted. There will be no make-up or early exams for any test. If a test is missed for a valid pre-notified reason (medically certified illness, bereavement in family), you will be permitted to replace the missing test score by your pro-rated score on the final. For reasons of equity, any student who takes all three tests will have the Final exam score replace the lowest test score whenever this is to the students benefit. Since the Final exam will be challenging, no student should *a priori* bet on the score on the Final being better than any given test score. In any event, the score on the Final cannot replace an unexcused test absence. A second missed test for any reason is an automatic zero.

Recommended Study Methods: This is a challenging class. You ought to devote an appropriate amount of time to it beginning on the first day. The lectures and the text will complement each other. It is very important to start practicing proofs at the beginning, when they are mostly straightforward, so that the later ones will be within your reach. Many of the problems are straightforward. But even the best students should expect to find that attempting some of the problems will be a frustrating experience. If you are having trouble with a problem, put it aside for a while (several hours or a day), and then attempt it again and/or discuss it with a classmate. Most real understanding comes from struggling with the problems. It is part of "doing Math". If you are still stuck, ask me! In any event, the homework you hand in must be your own.