

MATH 344: Abstract Algebra

Fall 2008, 4 credits, MWRF 10:00-10:50 a.m., Murphy Center 419

Instructor: Dr. Sheldon Lee

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Office hours: 9 – 10 MWF, 12 – 2 T, 12 – 1 R

Catalog Course Description: Study of selected algebraic topics such as: groups, rings, and fields; ring of integers, polynomials; fields of real numbers, complex numbers; finite fields. Prerequisite: grade of C or higher in 260.

Text: *Abstract Algebra, An Introduction*, 2nd Edition, Thomas W. Hungerford

Graded item Percent of overall grade

Two midterm exams 15% each

Homework 40% total

Projects 10%

Final Exam 20%

Grading

90% and above A

80 – 89% B

70 – 79% C

60 – 69% D

Exams

There will be two in-class exams and a cumulative final.

Exam 1: Wed, Oct. 1

Exam 2: Wed, Nov. 12

Final Exam: Wednesday Dec. 10, 9:50 - 11:50 a.m., Murphy Center, Room 419

Course Goals and Objectives

Because this course may be taken as part of the General Education requirements, the specific General Education Core Abilities are listed:

- (a) Thinking: Students engage in the process of inquiry and problem solving.
 - Students will understand the concepts of various algebraic structures
 - Students will be skilled in writing mathematical proofs
- (b) Ethical Decision Making: Students respond to ethical issues, using informed value systems.
 - Students will understand how academic honesty in mathematics requires deductive reasoning.
 - Students will understand the need to do their own work, and to honestly challenge themselves to understand the material.
- (c) Communication: Students speak and write to suit varied purposes, audiences, disciplines, and contexts.
 - Students will participate in class discussions on the material at hand.

- Students will improve their ability to write solutions to a variety of problems.
- Students will demonstrate an ability to make oral presentations of their work.
- (d) Cultural Sensitivity: Students understand their own and other cultural traditions and demonstrate a respect for the diversity of the human experience.
- Students will learn to use mathematical notation accurately and appropriately.

The Viterbo University Mathematics program assesses a set of “Student Learning Outcomes” to see whether our majors are learning to do the things a math major requires. In this course we assess the following outcomes:

- SLO 1: Our majors will demonstrate a basic understanding of axiomatic-deductive systems. (Reasoning)
- SLO 2: Our majors will understand proofs and be able to judge the correctness of an argument. (Reasoning)
- SLO 3: Our majors will be able to reason inductively. (Reasoning)
- SLO 4: Our majors will be able to reason deductively. (Reasoning)
- SLO 5: Our majors will demonstrate the ability to apply appropriate mathematical methods to novel or non-routine problems. (Problem Solving)
- SLO 7: Our majors will use the language of mathematics accurately and appropriately in oral presentation. (Communication)
- SLO 8: Our majors will use the language of mathematics accurately and appropriate in written form. (Communication)

Course Contents

This course will cover arithmetic in the integers, modular arithmetic, rings, fields, groups, and additional topics in algebra and number theory.

Homework

I encourage you to work together on exercises and in-class activities, but unless stated otherwise, the problem sets should represent your own work. You may discuss the problems with me but not anyone else. I will be asking you to sign a statement that each of these assignments you turn in is your own work. Especially because this is an “upper division” course, it is important that you demonstrate independence as well as quality of work.

About the Course

Unlike many courses in Mathematics, much of your course grade is homework, and most of these homework problems involve writing proofs. It is important to spend several hours per class period working on these problems outside of class. Writing proofs can be a frustrating experience. It is not unusual to be stuck for several hours on one problem. I will, of course, give hints and help you out when needed on the homework problems.

Americans with Disabilities Act (ADA):

If you have a diagnosed disability and require services or accommodations for this class, please inform me and Jane Eddy, the disabilities (ADA) coordinator (MRC 332; 796-3194) within 10 days to discuss your needs.