

Math 348 (548)

Summer 2008

Instructor Information

Instructor. Dr. Kenneth Price, Associate Professor of Mathematics.

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Office Hours in Swart 239. Ask in person, call, or send E-mail for arranged appointments.

Course Information

- Class meets Monday through Thursday from 10:00 to 11:30 AM and 12:20 to 1:30 PM.
- The first day is Monday, July 14 and the last day is Thursday, August 7.
- Our room is Swart Hall 302, but we will often meet in Halsey 101C for computer-based activities.

Prerequisite. Completion of Math 222 with a grade of C or better.

Textbook. Contemporary Abstract Algebra (6th edition) by Joseph Gallian, Houghton Mifflin Company. Problems will be assigned from this version of the book.

Course Topic.

Math 348 (548) provides an introduction to ring theory, an area of higher algebra. You are already familiar with some of the most important rings, such as the integers, the rational numbers, and the real numbers. The algebraic structures on these sets of numbers are based on addition and multiplication.

In higher mathematics courses, such as this one, the variables are just as likely to stand for actions as they are for numbers. For example, motions on the Euclidean plane can be represented by 2×2 matrices. This gives another example of a ring since you can add and multiply 2×2 matrices.

We will cover many more examples of rings and say as much as we can about the properties they have in common. It will be evident that some classes of rings, such as integral domains and fields, are particularly important and interesting.

Class Format.

We use methods of proof in every class so precise statements of definitions and theorems are essential. The actual statements we use may differ slightly from the textbook, so students must be able to recognize their logical equivalence. We cover lots of examples to motivate the need for definitions and to apply theorems.

Every student should plan to participate in group activities, to complete computer-based projects, to answer questions in class, and to present solutions at the board. A copy of your board presentation, which contains any lengthy calculations, must be provided to the instructor. You must be able to explain every step of your solution.

Graduate students taking this class are enrolled in Math 548. Graduate students must demonstrate higher-level thinking than their undergraduate classmates. Grading criteria is adjusted to account for different levels of mastery. Graduate students complete additional presentations to demonstrate analysis and synthesis of ideas as well as use of mathematical language.

Explanation of Grading

Grading Policy

A statement of the solution with no additional explanation will not be awarded full credit.

Quizzes

As soon as we finish a chapter there will be a 10 point quiz on problems copied directly from the exercises. There will be no makeup quizzes but the lowest quiz score will be dropped.

Group Work

In-class activities will be assigned on a regular basis. You will work in groups to solve these problems and complete computer-based projects. Every group should submit a solution with everyone's name on it. Many of the computer-based projects come from the author's web page. <http://www.d.umn.edu/~jgallian/>

Makeup Policy. Students may submit late solutions to group work assignments for half-credit.

Homework Presentations

You will present solutions to homework problems in class. The solution must be accurate and complete. Your presentation is graded out of 10 points on use of notation (3 points), mathematical accuracy (3 points), clarity (2 points), and preparation (2 points). You may not present two problems in the same week.

Math 348 Students

You will present solutions to two homework problems in class. Your final grade is based on percentage of total points earned according to the following scale.

A	at least 92.0%	C	69.0% to 76.6%
AB	88.2% to 91.9%	CD	65.2% to 68.9%
B	80.5% to 88.1%	D	57.5% to 65.1%
BC	76.7% to 80.4%	F	below 57.5%

Math 548 Students

You will present solutions to three homework problems in class. Your final grade is based on percentage of total points earned according to the following scale.

A	at least 92.5%	C	69.5% to 77.1%
AB	88.7% to 92.4%	CD	65.7% to 69.4%
B	81.0% to 88.6%	D	58.0% to 65.6%
BC	77.2% to 80.9%	F	below 58.0%

Academic Integrity

The University of Wisconsin System disciplinary code provides standards of academic integrity for students. Section 14.01 of these guidelines states¹:

Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors.

Examples of academic misconduct include submitting others' work as your own, cheating on a quiz or exam, tampering with the work of others, and intentionally assisting another student in any of these activities.

¹The system guidelines and local procedures are printed in the UW Oshkosh Student Discipline Code 2001-2002. Questions should be directed to the Dean of Students office.