

MATH 344: Abstract Algebra

Spring 2010, 4 Credits, MWF 2.10 p.m R 2:00. MRC 444

Instructor: Dr Michael Wodzak, Associate Professor of Mathematics

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Hours: Daily 8-10am

Course Description: Study of selected algebraic topics such as: groups, rings, and fields; ring of integers, polynomials; field of real numbers, complex numbers; finite fields.

Prerequisite: grade of C or higher in 260..

Writing Course: MATH 344 is the “Writing” course for the mathematics program. This means that a significant portion of your grade will depend on how well you write proofs in the homework assignments.

Points: There will be two midterm exams worth 50pts each, a final worth 100pts and homeworks worth 300pts total.

Text: *Abstract Algebra* by W E Deskins, Dover Publishing.

Course Goals:

This course offers certain General Education Core Abilities:

- (a) Thinking: Students will engage in the process of inquiry and problem solving.
 - Students will understand various abstract algebraic structures
 - Students will be competent in writing mathematical proofs
- (b) Ethical Decision Making: Students respond to ethical issues using informed value systems
 - Ethical decision making demands a familiarity with axiomatic frameworks
 - Academic honesty in mathematics demands deductive reasoning
 - Students need to honestly challenge themselves to understand the material by doing their own work
- (c) Communication: Students listen and speak, read and write in ways that are appropriate to varied audiences, disciplines and contexts
 - Students will participate in class discussions
 - Students will improve their ability to write responses to mathematical problems
 - Students will make oral presentations of their own work.
 - Students will use mathematical notation accurately and appropriately

- (d) Cultural Sensitivity: Students understand their own and other cultural traditions and demonstrate a respect for the diversity of the human experience.

The Viterbo University Mathematics Program assesses a set of Student Learning Outcomes (SLOs). In this course we assess the following SLOs:

- SLO1: Our majors will demonstrate a basic understanding of axiomatic-deductive systems. (Reasoning)
- SLO2: Our majors will understand proofs and be able to judge the correctness of an argument. (Reasoning)
- SLO3: Our majors will be able to reason inductively (Reasoning)
- SLO4: Our majors will be able to reason deductively (Reasoning)
- SLO5: Our majors will be able to demonstrate the ability to apply appropriate mathematical methods to novel or non-routine problems. (Problem Solving)
- SLO7: Our majors will use the language of mathematics accurately and appropriately in oral communication (Communication)
- SLO8: Our majors will use the language of mathematics accurately and appropriately in written communication (Communication)

Topics Covered: These will include but will not be limited to
Axiomatic Systems
The relationship between Geometry and Abstract Algebra
Modular Arithmetic
Groups, Rings and Fields

Assessment Procedures:

Semester grades in this course will be awarded according to a standard scale:

- (90% and above) = A
(85% and above) = AB
(80% and above) = B
(75% and above) = BC
(70% and above) = C
(65% and above) = CD
(60% and above) = D
(Below 60%) = F

Semester grades are calculated purely on a points basis, that is, the letter grades you earn on individual exams are purely guidelines for you to gauge your progress. For example, if you miss a particular grade on an exam by a certain number of points, it is still possible to make up those points (and get into that grade bracket) in other parts of the course, perhaps on the next exam. On the other hand, just because you got a good grade on one test, you should realize that you can lose enough points to get into a lower grade bracket by doing poorly in another area of the course. Once again: it is points that count.

These points will be assessed on how well you do with homework assignments and this constitutes 80% of your grade. You can improve your homework grade by keeping a journal of your ideas throughout the class. I will increase the homework part of your grade by a letter grade (as much as 8% of the total grade) for a well kept journal. There will also 20% of your grade awarded for a final project presented to the class at the end of the semester. This grade can be improved by better than a letter (5% of the total grade) by good participation in class.

AMERICANS WITH DISABILITY ACT: If you are a person with a disability and require any auxiliary aids, services or other accommodations for this class, please see me or Jane Eddy (MC 320, 796-3085) within ten days to discuss your accommodation needs.