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## Math 360 Algebraic Structures I

Meets in Bouillon 106  
 MWF at 2:00

## Course Description

Algebraic Structures I is the study of various types of sets (categories) and their inherent structures. In this course, we examine Rings and Fields.

Office Hours: 11:00-11:50 M-F  
 or by appointment

Please contact me if you have special needs.

### Schedule

Week 1 Relations  
 Week 2 Functions  
 Week 3 Congruences  
 Week 4  $Z/(n)$ ; Intro to Rings  
 Week 5 Complex Number Field  
 Week 6 Rings of Polynomials  
 Week 7 Factoring Rings  
 Week 8 FTs Arithmetic and Algebra  
 Week 9 Special Topics  
 Week 10 Special Topics  
**Final Exam: Tuesday, March 17, 8:00-10:00**

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### About This Class

Algebraic Structures is traditionally a first course in the mathematics curriculum that demands formal use of logic to prove theorems. The course content highlights a framework supporting nearly ALL modern mathematics. As such, the subject cannot be learned by cursory survey, but must be examined with intensity. Take time to think about and discuss ideas and to write and rewrite proofs. Make working with others a priority, but also take time to internalize the ideas yourself. Rewards for your hard work will include understanding the "superstructure" of mathematics.

### Assessment and Evaluation

- 1) Participation 10%
- 2) 1 midterm 25%
- 3) Project 15%
- 4) Homework 10%
- 5) Quizzes 15%
- 6) Final Exam 25%

### Final Grading

93-100% A  
 90-92% A-  
 87-90% B+  
 83-86% B  
 80-82% B-  
 77-79% C+  
 73-76% C  
 70-72% C-  
 67-69% D+  
 63-66% D  
 60-62% D-  
 Below 60% F

### Objectives

- 1) Students will demonstrate reasoning and problem solving ability by modeling, generalizing, and justifying the main notions associated with Algebraic Structures, particularly Rings and Fields.
- 2) Students will demonstrate excellent written and oral communication in their demonstrations of Objective 1).
- 3) Students will demonstrate cooperative learning skills both inside and outside of class.

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### Text

*Abstract Algebra* by Nicodemi, Sutherland, and Towsley

