

Mathematics 482 Abstract Algebra II

1. Catalog Description

Math 481, 482 Abstract Algebra I, II (4) (4)

Introduction to the study of algebraic structures including groups, rings and fields. 4 lectures.
MATH 481 Prerequisite: MATH 306 or MATH 341 or consent of instructor. **MATH 482**
 Prerequisite: MATH 481.

2. Required Background or Experience

Math 481.

3. Learning Objectives

The student should know and be able to use the basic definitions and theorems of modern algebra. In addition, the student should recognize how these definitions and theorems relate to concepts from previous mathematics courses. For example, the student should understand that groups, rings, and fields are specialized sets and that they codify the interesting characteristics of the familiar number systems, while homomorphisms on these objects are specialized functions which preserve algebraic structure.

4. Text and References

Any junior-senior level modern algebra text such as:

1. Fraleigh, J., A First Course in Abstract Algebra, 7th ed., Addison-Wesley, 2003.
2. Gallian, Joseph A., Contemporary Abstract Algebra, 6th ed., Houghton-Mifflin, 2006.
3. Herstein, I. N., Abstract Algebra, 3rd. ed., Wiley, 1996.
4. Rotman, Joseph J. A First Course in Abstract Algebra, 2nd ed., Prentice-Hall, 2000.

5. Minimum Student Materials

Paper, pencils and notebook.

6. Minimum University Facilities

Classroom with ample chalkboard space for class use.

7. Content and Method

<u>Topics</u>	<u>Lectures</u>
Integral domains	6
Euclidean domains, principal ideal domains, unique factorization domains	4
Polynomial rings and polynomials	12
Field extensions and finite fields	12
Geometric constructions	<u>2</u>
Total	36

Method

Lecture, discussion, student participation.

8. Methods of Assessment

Homework assignments, class demonstrations, quizzes, and examinations.