

Fayetteville State University
COLLEGE OF ARTS AND SCIENCES
Department of Mathematics and Computer Science
MATH 362-01 Introduction to Modern Algebra II
Spring 2012

“In case FSU must close for an emergency during the semester, instruction will continue using Blackboard.”

I.LOCATOR INFORMATION:

Instructor: **Dr. Xin Tang**

Course # and Name: **Math 362-Introduction to Modern Algebra II**

Day and Time Class Meets: **MWF 11:00 pm-11:50 am**

Semester Credit Hours: **3**

Total Contact Hours for Class: **45**

Office Hours: **WF 8:00 am-11:00 am & R 12:00 pm-2:00 pm** Office Location: **Lyons 120**

Office Phone: **910-672-2206**

Email Address: **xtang@uncfsu.edu**

FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an electronic mail account (studentid@brncos.uncfsu.edu) that is easily accessible via the Internet. The university has established FSU email as the primary mode of correspondence between university officials and enrolled students. Inquiries and requests from students pertaining to academic records, grades, bills, financial aid, and other matters of a confidential nature must be submitted via FSU email. Inquiries or requests from personal email accounts are not assured a response. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail.

Rules and regulations governing the use of FSU email may be found at
<http://www.uncfsu.edu/PDFs/EmailPolicyFinal.pdf>

II. COURSE DESCRIPTION:

This course is a continuation of MATH 361 and presents a deeper and *extended* study of rings, ring homomorphisms and ideals, factor rings, properties of ideals, integral domains, unique factorization domains, polynomial rings, irreducibility tests, field extensions, algebraic extensions, and introduction to Galois Theory, and related topics. **Prerequisite:** MATH 361

III. DISABLED STUDENT SERVICES:

In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ACA) of 1990, if you have a disability or think you have a disability to please contact the Center for Personal Development in the Spaulding Building, Room 155 (1st Floor); Tel: 910-672-1203.

IV. TEXTBOOK:

Contemporary Abstract Algebra (Seventh Edition) by Joseph A. Gallian, Brooks/Cole, ISBN 0-547-16509-9.

V. STUDENT LEARNING OUTCOMES:

Upon completion of this course, students will be able to:

- State the definition of rings, describe their properties and provide important examples and counter-examples of rings.
- State the definition of integral domains, describe their properties and present typical examples of integral domains.
- Understand the concepts of sub-rings, ideals and factor rings, apply the sub-ring test and the ideal test, and construct typical examples of factor rings.
- Understand the concept of ring homomorphisms, describe their basic properties and present examples of ring homomorphisms; understand the connection between ideals and ring homomorphisms.
- Factorize polynomials, apply irreducibility tests, and understand the divisibility in integral domains such as polynomial rings.
- Understand the concept of fields, describe their basic properties, and present examples and counter-examples of fields.
- State the fundamental theorem of field theory, understand the concept of algebraic extensions and present typical examples of algebraic extensions; understand the basics about finite fields.
- Make connections and comparisons between the concepts of groups, rings and fields and make connections to other related subjects such as Number Theory.

VI. COURSE REQUIREMENTS AND EVALATION CRITERIA: Evaluation in the course shall be using continuous assessment. Mode of assessment would include homework assignments, chapter exams, class participation and project, and final examination. The grading scale is given below.

- a. A = 90-100% B = 80-89% C=70-79% D=60-69% F=Below 60%
- b. Students are only allowed to miss less than 10% of all classes for acceptable reasons.
- c. The distribution of credit is listed as follows:
 - Homework: 20 points
 - Tests (3): 45 points
 - Final Exam: 25 points
 - Class Participation: 10 pts
- d. **No make-up exams or late assignments will be given or accepted without the instructor's prior permission.**

GENERAL REQUIREMENTS:

- The student is expected to pre-study each lesson in advance, complete all assignments, and spend adequate time on class work to insure success in the course. At least two hours of study is expected for each class hour.
- It is the responsibility of the student to avail himself/herself at all class meetings, and obtain additional help as needed. Consult the University Catalogue on Class Attendance Policy.
- Students are expected to enter the classroom on time and remain until the class ends. **Late arrivals and early departures without appropriate excuses will not be tolerated.**
- Each student is encouraged to participate in class discussion for a clearer understanding and meet with the instructor when additional assistance is needed. All class discussions should be done in a soberly, orderly, and respectful manner.

VII. ACADEMIC SUPPORT RESOURCES-Additional course information will be announced through [Blackboard](#).

VIII. COURSE OUTLINE:

The following Course Outline is subject to change if appropriate. The homework assignments will be assigned for each chapter in class.

Class	Topics covered	Class	Topics covered
Jan 9	Chapter 12	Mar 2	Chapter 18
Jan 11	Chapter 12	Mar 12	Chapter 18
Jan 13	Chapter 12	Mar 14	Chapter 19
Jan 18	Chapter 13	Mar 16	Chapter 19
Jan 20	Chapter 13	Mar 19	Chapter 19
Jan 23	Chapter 13	Mar 21	Review for exam 2
Jan 25	Chapter 14	Mar 23	Exam 2
Jan 27	Chapter 14	Mar 26	Chapter 20
Jan 30	Chapter 14	Mar 28	Chapter 20
Feb 1	Chapter 15	Mar 30	Chapter 20
Feb 3	Chapter 15	Apr 2	Chapter 21
Feb 6	Chapter 15	Apr 4	Chapter 21
Feb 8	Chapter 15	Apr 9	Chapter 21
Feb 10	Review for Exam 1	Apr 11	Chapter 22
Feb 13	Exam 1	Apr 13	Chapter 22
Feb 15	Chapter 16	Apr 16	Chapter 22
Feb 17	Chapter 16	Apr 18	Chapter 23
Feb 20	Chapter 16	Apr 20	Review for Exam 3
Feb 22	Chapter 17	Apr 23	Exam 3
Feb 24	Chapter 17	Apr 25	Review for Final Exam
Feb 27	Chapter 17	Apr 27	Review for Final Exam
Feb 29	Chapter 18		

IV. TEACHING STRATEGIES:

The majority of the material of this course will be given in lecture format. There will be a short review before and after each lecture. Student discussions, cooperative learning groups will be strongly encouraged.

X. BIBLIOGRAPHY:

- David S. Dummit, Richard M. Foote, Abstract Algebra, John Wiley & Sons, Second Edition, 1999
- John B. Fraleigh, A First Course in Abstract Algebra, Macmillan Publishing Co, Sixth Edition, 1999.
- Aigli Papantonopoulou, Algebra: Pure and Applied, Prentice Hall, First Edition, 2002.
- Joseph J. Rotman, First Course in Abstract Algebra, Prentice Hall, Second Edition, 2000.
- Joseph, A. Gallian, Contemporary Abstract Algebra, Sixth Edition, Houghton Mifflin Company, ISBN 0-618-51471-6.