

University of North Texas at Dallas
Spring 2011
SYLLABUS

MATH 3510		ABSTRACT ALGEBRA		3Hrs
Department of	Mathematics and Information Sciences	Division of	Liberal Arts & Sciences	
Instructor Name:	Dr. Noureen Khan			
Office Location:	223 DAL2			
Office Phone:	972 -338 -1567			
Email Address:	noureen.khan@unt.edu			
Office Hours:	M - W 2:00 - 3:30 pm T - R 2:30 - 3:30 pm			
Lab Hours:	M - W 3:30 - 5:30 pm			
Classroom Location:	DAL2 201 D			
Class Meeting Days & Times:	MW 1:00 pm - 2:20 pm			
Course Catalog Description:	Groups, rings, integral domains, polynomial rings and fields.			
Prerequisites:	MATH 3000 Real Analysis			
Required Text:	John B. Fraleigh, <i>A First Course in Abstract Algebra</i> 7th edition, Addison Wesley			
Recommended Text and References:	<ul style="list-style-type: none"> • J. Gallian, <i>Contemporary Abstract Algebra</i>, 6th Ed., 2005 • Herstein, <i>Topics in Algebra</i>, 2nd Ed., 1975. Wiley. 			
Access to Learning Resources:	UNT Dallas Library: phone: (972) 780-3625; web: http://www.unt.edu/unt-dallas/library.htm UNT Dallas Bookstore: phone: (972) 780-3652; e-mail: 1012mgr@fhcg.follett.com			
Course Overview: The goal of this course is to:				
1.	Present the study of general algebraic structures of various sets (such as real numbers, complex numbers, matrices, and vector spaces) on which operations have been defined.			
2.	Learn about algebraic systems like; groups, rings, fields, modules, vector spaces, loops.			
3.	Emphasize two main topics, groups and rings.			
4.	Describe groups and their structure, with an emphasis on examples such as the cyclic, abelian group, factor group and the symmetric groups.			

5.	Discuss about more general rings, emphasizing the particular case of polynomial rings and their quotients, which lead to field theory.
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Learning Objectives/Outcomes (Course): At the end of this course, the student will be able to

1	Read, understand, formulate, explain and apply the concept of equivalence relation.
2	Define binary operation, group, homomorphism, isomorphism and Factor group.
3	Understand the properties of a group, subgroup and the Lagrange Theorem.
4	Compute permutation groups and represent rings by applying the knowledge of groups.
5	Solve the problems of finding the fields and Integral domains.

Learning Objectives/Outcomes (Program):

- Students will be able to communicate with technical precision in writing mathematical ideas.
- Students will be able to read, understand, formulate, explain, and apply mathematical statements.
- Students will be able to state and prove important results in key mathematical areas including algebra and analysis.

Course Outline:

Abstract algebra (also known as modern algebra) is the branch of mathematics that studies the general algebraic structures of various sets. This course will present a variety of Algebraic systems, emphasizing more on the mathematical theory and the development of intuition. Prior experience with analytic proofs will be assumed; here you will be introduced to algebraic proofs. Attendance is required for this class but it's not counted towards final grades. The home work problems will be discussed in the beginning of following class for better understanding of the contents. There will 2-3 take home assignments, 10 quizzes, three major exams, and a comprehensive final exam. The grades will be posted on Blackboard. This schedule is subject to change by the professor. Any changes to this schedule will be communicated in class and/or posted on Blackboard.

Course Evaluation Methods:

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course.

Home Work:

Home work will be assigned in every class meeting and will be collected time to time without notice. You are required to do all your home work in a proper notebook throughout the semester. It's your responsibility to obtain the missing class/home work from you class mates or by contacting me.

Quizzes

Weekly quizzes will hold first 15 minutes of the Thursday's class.

Exams

There will be Three Midterm Exams; the best TWO will be counted towards the final grade.

Final Exam

There will be a Comprehensive Final Exam at the end of semester.

The dates for the quizzes, exams and Final exams are pointed on the schedule.

Absolutely NO MAKE –UP Quizzes or Exams

Grading Matrix:

Instrument	Value (points or percentages)	Total
Quizzes	10 quizzes/ 15 points each	150
Project	50 Points	50
Exam	2 tests/ 100 points each	200
Final Exam	One comprehensive final exam	100
Total:		500

Grade Determination:

Grade	Percentage %	Points
A	90 or better	450 or more
B	80 – 89	400 – 449
C	70 – 79	350 – 399
D	60 – 69	300 – 349
F	less than 60	299 or less

Calculator Policy: This course DOESN'T REQUIRE a graphing calculator, however; you are allowed to use scientific calculator.

Class Schedule:

This schedule is subject to change by the professor. Any changes to this schedule will be communicated in class and/or posted on Blackboard.

	Tuesday	Thursday	Topics	
Week 1 Jan 18 & Jan 20			Chapter 0	Sets and Relations
Week #2 Jan 25 & Jan 27		Quiz #1	Chapter 1	Binary Operations
Week 3 Feb 01 & Feb 03		Quiz #2	Chapter 1	Groups and Subgroups
Week 4 Feb 08 & Feb 10		Quiz #3	Chapter 1	Cyclic Groups
Week 5 Feb 15 & Feb 17	Test #1		Chapter 2	Group of Permutations
Week 6 Feb 22 & Feb 24		Quiz #4	Chapter 2	Cycles, Cosets
Week 7 Mar 01 & Mar 03		Quiz #5	Chapter 2	Lagrange Theorem, Direct product,
Week 8 Mar 08 & Mar 10		Quiz #6	Chapter 2	Abelian Groups
Week 9 Mar 14 & Mar 18	<i>SPRING BREAK</i>			
Week 10 Mar 22 & Mar 24	Test #2		Chapter 3	Homomorphism
Week 11 Mar 29 & Mar 31		Quiz #7	Chapter 3	Factor Groups
Week 12 Apr 05 & Apr 07		Quiz #8	Chapter 4	Rings and Fields
Week 13 Apr 12 & Apr 14		Quiz #9	Chapter 4	Integral Domain,
Week 14 Apr 19 & Apr 21		Quiz #10	Chapter 4	Fermat's and Euler's Theorem
Week 15 Apr 26 & Apr 28	Test #3		Chapter 5	Ideals
Week 16 May 03 & May 05		Review Final Exam	Chapter 5	Factor Rings
Week 17 May 09 – May 12			<i>Comprehensive Final Exam</i>	

University Policies and Procedures

Students with Disabilities (ADA Compliance):

The University of North Texas Dallas faculty is committed to complying with the Americans with Disabilities Act (ADA). Students' with documented disabilities are responsible for informing faculty of their needs for reasonable accommodations and providing written authorized documentation. For more information, you may visit the Office of Disability Accommodation/Student Development Office, Suite 115 or call at 972-780-3632.

Student Evaluation of Teaching Effectiveness Policy:

The Student Evaluation of Teaching Effectiveness (SETE) is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider the SETE to be an important part of your participation in this class.

Exam Policy:

Exams should be taken as scheduled. No makeup examinations will be allowed except for documented emergencies (See Student Handbook). In the case of injury or illness, you need to provide a note from a health care professional affirming date and time of a medical office visit regarding the injury or illness and stating that you should not be in class that day. You must notify me no later than the end of the second working day after the missed exam.

Academic Integrity:

Academic integrity is a hallmark of higher education. You are expected to abide by the University's code of conduct and Academic Dishonesty policy. Any person suspected of academic dishonesty (i.e., cheating or plagiarism) will be handled in accordance with the University's policies and procedures. Refer to the Student Code of Conduct at http://www.unt.edu/csr/student_conduct/index.html for complete provisions of this code.

Attendance and Participation Policy:

The University attendance policy is in effect for this course. Class attendance and participation is expected because the class is designed as a shared learning experience and because essential information not in the textbook will be discussed in class. The dynamic and intensive nature of this course makes it impossible for students to make-up or to receive credit for missed classes. Attendance and participation in all class meetings is essential to the integration of course material and your ability to demonstrate proficiency. Students are responsible to notify the instructor if they are missing class and for what reason. Students are also responsible to make up any work covered in class. It is recommended that each student coordinate with a student colleague to obtain a copy of the class notes, if they are absent. **Excessive absences (more than 3 classes) may result in being dropped from the class or receiving an F for the course.**

Diversity/Tolerance Policy:

Students are encouraged to contribute their perspectives and insights to class discussions. However, offensive & inappropriate language (swearing) and remarks offensive to others of particular nationalities, ethnic groups, sexual preferences, religious groups, genders, or other ascribed statuses will not be tolerated. Disruptions which violate the Code of Student Conduct will be referred to the Center for Student Rights and Responsibilities as the instructor deems appropriate.

Copyright Policy:

The handouts used in this course are copyrighted. By "handouts," I mean all materials generated for this course, which include but are not limited to syllabi, lecture notes, quizzes, exams, in-class materials, review sheets, projects, and problems sets. Because these materials are copyrighted, you do not have the right to copy and distribute the handouts, unless I expressly grant permission.

Miscellaneous Policy:

- Use of Cell Phones & other Electronic Gadgets (such as Laptops) in the Classroom are prohibited.
- Food and drinks are not allowed during the lectures.