

University of North Texas at Dallas
Spring 2014
SYLLABUS

MATH 3510D-090: Abstract Algebra 3Hrs	
Department of	Mathematics and Information Sciences
Division of	Mathematics
Instructor Name:	<i>Mehmet Celik</i>
Office Location:	<i>DAL2, Room #225</i>
Office Phone:	<i>972-338 1568</i>
Email Address:	<i>Mehmet.Celik@unt.edu</i>
Office Hours:	<i>Mon. 02:30pm-04:30pm;</i> <i>Tues. 12:00pm-03:00pm;</i> <i>Wed. 02:30pm-05:00pm;</i> <i>Thur. 11:30pm-01:00pm;</i>
Virtual Office Hours:	<i>N/A</i>
Classroom Location:	<i>DAL2 Room #243</i>
Class Meeting Days & Times:	<i>Tuesday & Thursday 10:00AM-11:20AM</i>
Course Catalog Description:	<i>Groups, rings, integral domains, polynomial rings and fields.</i>
Prerequisites:	<i>MATH 3000 Real Analysis I and MATH 2700 Linear Algebra and Vector Geometry (maybe taken concurrently)</i>
Co-requisites:	<i>N/A</i>
Required Text:	<ul style="list-style-type: none"> • the title and edition of the book: <i>First Course in Abstract Algebra, A, 7/E</i> • the author(s): <i>John B. Fraleigh</i> • the publisher: <i>Pearson</i> • ISBN-10: <i>0201763907</i> ISBN-13: <i>9780201763904</i>
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@fhg.follett.com
Course Goals:	The goal of this course is to
	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.
	Learn about algebraic systems like; groups, rings, fields, modules, vector spaces, loops.
	Emphasize two main topics, groups and rings.
	Describe groups and their structure, with an emphasis on examples such as the cyclic, abelian group, factor group and the symmetric groups.

	Discuss about more general rings, emphasizing the particular case of polynomial rings and their quotients, which lead to field theory.
Expected 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 Math Program Objectives:	
SLO-2	Students will be able to communicate with technical precision in writing mathematical ideas.
SLO-3	Students will be able to read, understand, formulate, explain, and apply mathematical statements.

Course Outline

Major Course Topics:

1. Groups
 - Subgroups
 - Cyclic Groups
 - Permutations
 - Cycles
 - Cosets
 - Lagrange Theorem
 - Direct Products
 - Abelian Groups
 - Homomorphism
 - Factor Groups
2. Rings
 - Ideals
 - Integral Domains
 - Factor Rings
3. Fields
 - Fermat's and Euler's Theorem

This schedule is subject to change by the instructor. Any changes to this schedule will be communicated by email and in-class announcements.

	Tuesday	Thursday	Topics
Week #1 Jan. 14 & Jan.16			Section 0: Sets and Relations Section 1: Introduction and Examples
Week #2 Jan. 21 & Jan.23		Quiz #1	Sections 2: Binary Operations Section 3: Isomorphic Binary Structure
Week 3 Jan. 28 & Jan.30		Quiz #2	Section 4: Groups & Section 5: Subgroups

Week 4 Feb. 04 & Feb. 06		Quiz #3	Section 6: Cyclic Groups
Week 5 Feb. 11 & Feb. 13		Quiz #4	Section 8: Group of Permutations
Week 6 Feb. 18 & Feb. 20		Exam #1	Section 9: Cycles Section 10: Cosets
Week 7 Feb. 25 & Feb. 27			Section 10: Lagrange Theorem Section 11: Direct Product,
Week 8 Marc 04 & March 06		Quiz #5	Section 11: Abelian Groups
Marc 10 - March 17	<i>SPRING BREAK</i>		
Week 9 Marc 18 & March 20		Quiz #6	Section 13: Homomorphism
Week 10 Marc 25 & March 27		Quiz #7	Section 14: Factor Groups
Week 11 Apr. 01 & Apr. 03		Quiz #8	Section 18: Rings and Fields
Week 12 Apr. 08 & Apr. 10		Exam #2	Section 19: Integral Domain,
Week 13 Apr. 15 & Apr. 17			Section 20: Fermat's and Euler's Theorem
Week 14 Apr. 22 & Apr. 24		Quiz #9	Section 26: Factor Rings
Week 15 Apr. 29 & May 01		Quiz #10	Section 27: Ideals
	FINAL EXAM DATE AND TIME: Thursday, May 08, 2014 between 10:00 AM -12:00 PM		

Course Evaluation Methods

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

Exams – *Two Mid-term Exams and a comprehensive Final Exam.* There will be two Mid-term exams. You will have a full class period (80 minutes) to complete each. The date for each exam is pointed in the schedule. See Make-up Policy section for more information on the Exams. The Final Exam date is

Final Exam Date and Time:	Thursday, May 08, 2014 between 10:00 AM -12:00 PM
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In-class Quizzes – In-class Quizzes will be hold at the first 10 minutes of a class. The dates for each quiz are pointed on the schedule above. **There will be no make-ups for any missed in-class quizzes. Instead, at the end of**

the semester eight of the highest in-class quizzes will be considered.

Homework Assignments: Every week there will be one homework assignment. The number of questions in the assignments may change but **only two randomly chosen questions will be graded** from the assignment. According to recommendations made from Spring 2013 Math Program Assessments (SLO-2 Method 1 & SLO-3 Method 1)

- In every assignment there will be questions requiring students to understand the concepts.
- In every assignment there will be questions requiring students to write proofs of mathematical statements.
- In every assignment there will be also problems involving reading, understanding, formulating, explaining, and applying mathematical statements.

Grading Matrix:

Instrument	Value (points or percentages)	Total
In-class Quizzes	7 in-class quizzes (best ones) at 10 points each	70
Homework Assignments	10 homework assignments at 7 points each	70
Mid-Term Exams	2 midterm exams at 80 points each	160
Final Exam	One comprehensive final exam at 100 points	100
Total:		400

Grade Determination:

A = 400 – 360 pts; i.e. 90% or better

B = 320 – 359 pts; i.e. 80 – 89 %

C = 280 – 319 pts; i.e. 70 – 79 %

D = 240 – 279 pts; i.e. 60 – 69 %

F = 239 pts or below; i.e. less than 60%

Email Policy: Use your Blackboard email account to contact me. You should check your email account on the Blackboard every day. You are responsible for any information that I send out via email. Due to privacy rights, I will not discuss grades over the phone. I will only answer emails from your **Blackboard** account.

Calculator Policy: No any calculators are required for this course.

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. Grades assigned before an accommodation is provided will not be changed as

accommodations are not retroactive. For more information, you may visit the Student Life Office, Suite 200, Building 2 or call Laura Smith 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.

Assignment Policy:

There will be no make-ups for any missed in-class quizzes. Instead, at the end of the semester two of the lowest in-class quizzes will be dropped.

Exam Policy:

Exams should be taken as scheduled. No makeup examinations will be allowed except for documented emergencies (See Student Handbook). Specifically, 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 Academic Integrity 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 Academic Integrity at <http://www.unt.edu/unt-dallas/policies/Chapter%2007%20Student%20Affairs,%20Education,%20and%20Funding/7.002%20Code%20of%20Academic%20Integrity.pdf> for complete provisions of this code. In addition, all academic work submitted for this class, including exams, papers, and written assignments should include the following statement: **On my honor, I have not given, nor received, nor witnessed any unauthorized assistance that violates the UNTD Academic Integrity Policy.**

Bad Weather Policy:

On those days that present severe weather and driving conditions, a decision may be made to close the campus. In case of inclement weather, call UNT Dallas Campuses main voicemail number (972) 780-3600 or search postings on the campus website www.unt.edu/dallas. Students are encouraged to update their Eagle Alert contact information, so they will receive this information automatically.

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 lectured classes**

may result in being dropped from the course or receiving an F for the course.

For security measures once a student signs an attendance sheet she/he cannot leave the class without professor's permission.

- *If a student needs to leave the class earlier she/he should talk to the professor before the class; the student should leave the classroom quietly.*
- *If a student has to leave the class (for example in case of a family emergency or a similar situation) the student must invite the professor politely out of the classroom to explain the situation.*

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.

Other Policy:

*Use of Cell Phones & other Electronic Gadgets (such as Laptops) in the Classroom are prohibited. **Food** is prohibited, drink is allowed in the Classroom.*