

King Fahd University of Petroleum & Minerals
Department of Mathematics and Statistics
Spring 2022 (Term 212)

SYLLABUS AND POLICY

Course : **Math 323**
 Title : **Modern Algebra I**
 Textbook : Contemporary Abstract Algebra, by **J. A. Gallian**, 8th edition.
 Objective : Introduce students to the basic notions and techniques of Abstract Algebra.

Weeks	Part	Chapters	Titles
1 – 9	Groups	2	Groups
		3	Finite groups and subgroups
		4	Cyclic groups
		5	Permutation groups
		6	Isomorphisms
		7	Cosets and Lagrange's Theorem
		8	External direct products
		9	Normal subgroups and factor groups
		10	Group homomorphisms
		11	Fundamental theorem of finite abelian groups
		10 – 15	Rings
13	Integral domains		
14	Ideals and factor rings		
15	Ring homomorphisms		
16	Polynomial rings		
17 4.2	Factorization of polynomials over a field [from W. K. Nicholson's Book]		
18 4.3	Factor rings of polynomials over a field [from W. K. Nicholson's Book]		

Grading Policy (*)	Weight	Dates
Test 1 (Chapters 2 – 7)	50	Thursday, February 24, 10:00 – 10:50 a.m.
Midterm Exam (Chapters 2 – 11)	80	Tuesday, March 29, 5 – 7 p.m.
Test 2 (Chapters 12 – 16)	50	Thursday, April 21, 10:00 – 10:50 a.m.
Final Exam (Comprehensive)	120	tba
TOTAL	300	

(*) **No Makeup** is given under any circumstance. If a student misses an assessment for a legitimate reason (e.g., medical emergency), his final grade will be determined based on the non-missed assessments.

Learning Outcomes: Upon completion of this course, students should be able to

- Define normal subgroups, factor groups, homomorphisms
- Discuss the fundamental theorem of finite Abelian groups
- Explain integral domains and fields
- Define ideals, factor rings and ring homomorphisms
- Explain factorization of polynomials over a field, factor rings of polynomials over a field
- Define irreducible elements and unique factorization
- Discuss principal ideal domains

Academic Integrity: All KFUPM ethic policies apply in this course.

University Policy on Attendance: A DN grade will be awarded to any student who accumulates 9 absences.

Office Hours and Contact Information: Office hours: UTR 8:00 a.m. – 9:00 a.m.

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