

King Fahd University of Petroleum & Minerals
Department of Mathematics and Statistics
Spring 2021 (Term 202)

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	Topics
January MW 18, 20 MW 25, 27	Groups	2	Groups
		3	Finite groups and subgroups
		4	Cyclic groups
February MW 01, 03 MW 08, 10 MW 15, 17 MW 22, 24		5	Permutation groups
		6	Isomorphisms
		7	Cosets and Lagrange's Theorem
		8	External direct products
		9	Normal subgroups and factor groups
		10	Group homomorphisms
March MW 01, 03		11	Fundamental theorem of finite abelian groups
MW 08, 10 MW 15, 17 MW 22, 24 MW 29, 31		Rings	12
	13		Integral domains
	14		Ideals and factor rings
	15		Ring homomorphisms
April MW 05, 07 MW 12, 14	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]	
MW 19, 21 MW 26, 28	Groups	24	Sylow's Theorems

Grading Policy (*)	Weight
Homework (HW1-5 = 60 Problems)	15%
Online Test 1 (Chapters 2 – 7)	8%
Online Test 2 (Chapters 12 – 16)	7%
Midterm Exam	30%
Final Exam (Comprehensive)	40%

Homework (**)
HW 1 (Chapters 2, 3, 4)
HW 2 (Chapters 5, 6, 7, 8)
HW 3 (Chapters 9, 10, 11)
HW 4 (Chapters 12, 13, 14)
HW 5 (Chapters 15, 16)

(*) **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.

(**) The homework should be emailed (in PDF) to the TA (see coordinates below).

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

University Policy on Cheating & Plagiarism:

“All academic work or requirements assigned to a student must be carried out by him without any unauthorized aid of any kind. ... If any instance of dishonesty by a student in homework assignments or any other requirements of the course is discovered by an instructor, it is his responsibility to take appropriate action.” [Undergraduate Bulletin, Page 49]

University Policy on Attendance:

A **DN** grade will be awarded to any student who accumulates **9 absences**.

Office Hours and Contact Information:

Office hours: MW 9:45 a.m. - 11:00 a.m.

Teacher: Salah-Eddine Kabbaj (صلاح الدين الكبّاج), Office: 5-428, Email: kabbaj@kfupm.edu.sa

Teaching Assistant (TA): Faisal Suwayyid (فيصل السويد), Email: faisal.suwayyid@kfupm.edu.sa
