

King Fahd University of Petroleum & Minerals
Department of Mathematics and Statistics
Spring 2019 (Term 182)

SYLLABUS AND POLICY

Course : **Math 323** [formerly numbered **Math 345**]
 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	Section	Topics
January MW 07, 09 MW 14, 16 MW 21, 23 MW 28, 30	I. Groups	2	Groups
		3	Finite groups and subgroups
		4	Cyclic groups
		5	Permutation groups
		6	Isomorphisms
		7	Cosets and Lagrange's Theorem
February MW 04, 06 MW 11, 13 MW 18, 20		8	External direct products
		9	Normal subgroups and factor groups
		10	Group homomorphisms
		11	Fundamental theorem of finite abelian groups
Exam 1: Tuesday, February 26, 2018 ; 4:30 p.m. – 6:00 p.m. ; Room 4-100			
MW 25, 27 March MW 04, 06 MW 11, 13 MW 18, 20 MW 25, 27 April MW 01, 03	II. Rings	12	Introduction to rings
		13	Integral domains
		14	Ideals and factor rings
		15	Ring homomorphisms
		16	Polynomial rings
		4.2	Factorization of polynomials over a field [from W. K. Nicholson's Book]
	4.3	Factor rings of polynomials over a field [from W. K. Nicholson's Book]	
MW 08, 10 MW 15, 17	III. Groups	24	Sylow's Theorems
Exam 2: Tuesday, April 09, 2018 ; 4:30 p.m. – 6:00 p.m. ; Room 4-100			

Homework and Exams (*)	Weight
Homework (HW1-5 = 60 Problems)	20%
Exam 1 (Part I)	20%
Exam 2 (Part II)	20%
Final Exam (Parts I, II, III) Tuesday, April 30 at 7:00 p.m.	40%

Homework (**)	Latest Date for Submission
HW 1	Saturday, January 26 , 11:00 p.m.
HW 2	Saturday, February 16 , 11:00 p.m.
HW 3	Saturday, March 09 , 11:00 p.m.
HW 4	Saturday, March 23 , 11:00 p.m.
HW 5	Saturday, April 06 , 11:00 p.m.

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

(**) The homework can be handed or emailed to the TA.

Learning Outcomes:

Upon completion of this course, students should be able to

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

It must be understood that any student who knowingly aids in plagiarism or other cheating, e.g., allowing another student to copy a homework or exam question, is as guilty as the cheating student is.

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 8:30-10:00:00 a.m.

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

Teaching Assistant (TA): Abdulmuhsin Alfaraj (عبد المحسن الفَرَج), Office: 5-203/1, Email: afaraj@kfupm.edu.sa
