KINGDOOM OF SAUDI ARABIA
Ministry of Education
Al-Imam Mohammad Ibn Saud Islamic University
College of Sciences
Department of Mathematics & Statistics

المملكة العربية السعودية
وزارة التعليم
جامعة الإمام محمد بن سعود الإسلامية
كلية العلوم
قسم الرياضيات والإحصاء

SYLLABUS

Course Code	Course Num.	Course Name	Credit Hours	Lec.	Lab.	Tut.	Private study	Pre-requisites	Course Level	Teaching Language
MAT	**321**	**Modern Algebra**	**4**	**3**	**0**	**2**	**6**	**MAT 222**	**6[1]**	**English**

A. Course Description

This course is an introduction to the principles and concepts of modern algebra. Topics will include the theory of groups with their structures. It discusses also the theory of rings and their ideals, emphasizing Euclidean domains.

B. Course Outcomes

At the end of this course the student will be able to:

- Be familiar with elementary concepts of group theory.
- Use Structures of groups.
- Be familiar with rings and polynomial rings.

C. References:

Required Textbook

A First Course in Abstract Algebra, J. Farleigh, 1st Indian edition, Pearson Education, 2003.

Other references:

- *Contemporary Abstract Algebra, J. Gallian, 5th Edition, Houghton Mifflin Company, 2001.*
- *Abstract Algebra: An Introduction, T. Hungerford, 2nd Edition, Brooks Cole, 1996.*

Course Website: Google Classroom Webpage: http://www.imamm.org/

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[1]*B.Sc. in Applied Mathematics.*

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D. Topics Outline

1. **Group Theory:** Review, Definition of Group, Subgroups, Cyclic Groups, Euler's theorem, Cosets, Lagrange's theorem, Normal Subgroups, Quotient Groups.

2. **Structures of Groups:** Isomorphism Theorems, Conjugacy, Group acting on Sets, Finite Abelian Groups, Sylow Theorems, Examples of Simple Groups.

3. **Rings:** Basic definitions and examples, Ring Homomorphisms, Ideals. Quotient Ring, Principal Ideal Domains, Euclidean Domains, Fields.

4. **Polynomial rings:** Definitions and Basic Property, Polynomial Rings over Fields. Irreducibility Criteria.

E. Office Hours

Office hours give students the opportunity to ask in-depth questions and to explore points of confusion or interest that cannot be fully addressed in class.

F. Exams & Grading System

The semi-official dates of the exams for this course are:

- **Midterm 1:** 6th or 7th week.

- **Midterm 2:** 11th or 12th week.

- **Quizzes & Homeworks:** During the semester.

- **Final Exam:** 16th week.

Your course grade will be based on your semester work as follows:

Midterm 1: 20 %	Midterm 2: 20 %	Final Exam: 40 %
Quizzes, Homework, Attendance & Participation: 20 %		

The grading distribution:

A+	A	B+	B	C+	C	D+	D	F
[95, 100]	[90, 95)	[85, 90)	[80, 85)	[75, 80)	[70, 75)	[65, 70)	[60, 65)	[0, 60)

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G. Student Attendance/Absence

Only three situations will be considered as possible excused absences:

- Occurrence of a birth or death in the immediate family will be excused. ("Immediate family" is defined by the University as spouse, grandparents, parents, brother, or sister).
- Severe illness in which a student is under the care of a doctor and physically unable to attend class will be excused. Students are not excused for a doctor's appointment. Do not make appointments that conflict with rehearsals. Notes from the University Health Center will be accepted.

[Executive Rules for Study Regulations and Exams](goo.gl/ykm7t3)
goo.gl/ykm7t3