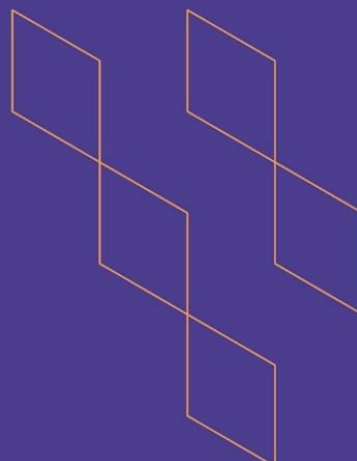




T-104
2022

Course Specification



Course Title: Abstract Algebra
Course Code: MATH630
Program: Master of Mathematics
Department: Mathematics
College: Science
Institution: University of Tabuk, KSA
Version: 2
Last Revision Date: 1/12/1442 H.



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A. General information about the course:

Course Identification

1. Credit hours: 3 H

2. Course type

a. University College Department Track Others

b. Required Elective

3. Level/year at which this course is offered: Level-1 / 1st Year

4. Course general Description

In this course, we will study some basic fundamentals of Abstract Algebra. Some important properties, theorems, problems, and applications will be also discussed.

5. Pre-requirements for this course (if any): None

6. Co- requirements for this course (if any):

None

7. Course Main Objective(s)

Main objectives are include the following:

1. Identify and recall the basic concepts on Abstract Algebra to develop the interest of concerned subject.
2. Describe the basic definitions and theorems on Rings.
3. How to form a quotient ring with the help of Ideals and rings.
4. Discuss the concept of ring homomorphism and by using this concept learn all three isomorphism theorems of rings.
5. Introduce the concepts of chain conditions on rings.
6. Explain the basic definitions and theorems on Modules.

Introduce the concepts of direct sums, direct products, direct summands and by using these concepts, learn about free modules, Projective and Injective modules.

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	45	100 %
2.	E-learning		
	Hybrid		
3.	<ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4.	Distance learning		

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
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1.	Lectures	3 H /week
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding The students will be able to:			
1.1	Demonstrate the advanced concepts and fundamentals of Abstract Algebra and related topics.	K1	Lectures, Group works, Presentations, Classroom discussion, Seminar, Case study, problem solving session	Exams Quizzes, Survey.
1.2	Describe good understanding in advance topics of Abstract Algebra.	K2		
1.3	Demonstrate an understanding of the definitions, relations and advanced applications of Abstract Algebra.	K3		
2.0	Skills The students will be able to:			
2.1	Apply the daily life applications of Ideals and Rings.	S1	Lectures, Group works, Presentations, Classroom discussion, Seminar, Case study, problem solving session	Quizzes, Exams, Assignments, Research project. Survey
2.2	Analyze the results in practical examples.	S2		
2.3	Using the concepts of chain conditions on rings.	S3		
3.0	Values, autonomy, and responsibility The students will be able to:			
3.1	Demonstrate responsibility during work individually or in group research.	V2	Lectures, Group works, Presentations, Classroom discussion, Seminar, Case study,	Assignments, Research project, Oral presentation,
3.2	Writing technical reports on	V2		



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	Abstract Algebra individually or in group.		problem solving session	interactive discussion and participation, Homework, Survey
...				

C. Course Content

No	List of Topics	Contact Hours
1	Basic definitions and theorems on Rings, Quotient rings, Ring homomorphisms	3
2	Isomorphism theorems of rings (statements and proofs)	3
3	Chain conditions on rings	3
4	Basic definitions and theorems on Modules	3
5	Submodules Factor modules,	3
6	Sum and intersection of sub-modules	3
7	Homomorphisms	3
7	Mid-Exam #	
8	Factor theorems	3
9	Inverse image of submodules	3
10	Direct summands	3
11	Free modules	3
12	Direct sums Direct products	3
13	Projective and Injective modules	3
14	Exactness	3
15	Semi-simple modules	3
16+17	Revision & Final Exam	
Total		45





D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Home works and Assignments	Weekly basis	20%
2.	Mid-term exam	7th weeks	25%
3.	Presentation and discussion	During the Semester	15%
4.	Final Exam	At End of Semester	40 %

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	<ol style="list-style-type: none"> Gregory T. Lee, Abstract Algebra, (ISBN 978-3-319-77648-4) Springer Gewerbestrasse 11, 6330 Cham, Switzerland (2018). T.Y. Lam, Lectures on Modules and Rings (ISBN 0-387-98428-3) GTM 189, Springer, USA (1999).
Supportive References	I.N. Herstein, Abstract algebra, Prentice-Hall, upper saddle river, New Jersey 07458, USA (1996).
Electronic Materials	Saudi digital library
Other Learning Materials	NA

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture Room with capacity of 30 students and equipped with White Board, Library
Technology equipment (projector, smart board, software)	Overhead projector and internet connection.
Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct and Indirect
Effectiveness of students assessment	Teacher	Direct
Quality of learning resources	Students	Indirect
The extent to which CLOs have been achieved	Teacher, Quality Committee	Direct and Indirect
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)





G. Specification Approval Data

COUNCIL /COMMITTEE	Study plans and programs committee
REFERENCE NO.	
DATE	1 / 12 /1442 H

