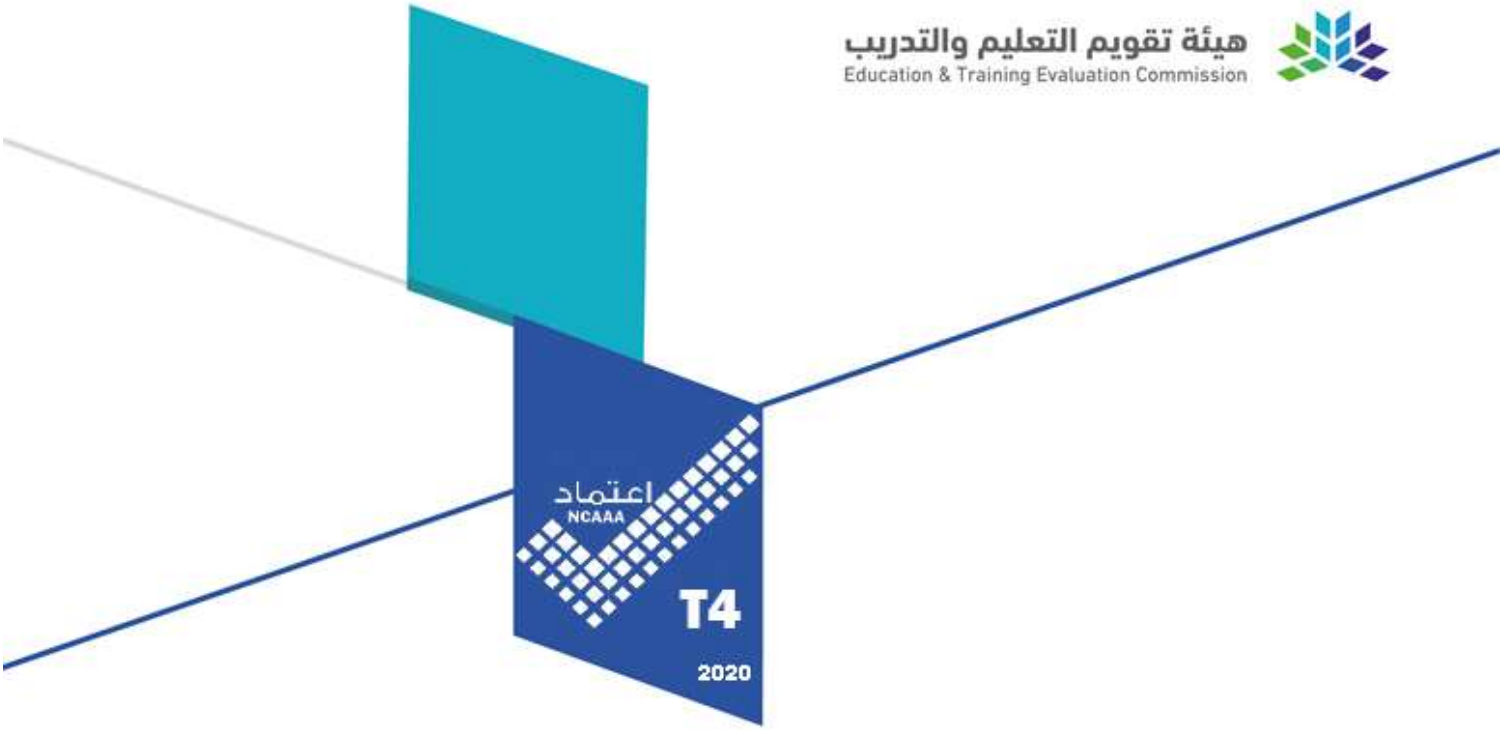
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Abstract Algebra 2
Course Code:	Math 343
Program:	Bachelor of Science in Mathematics
Department:	Mathematics
College:	Science
Institution:	University of Tabuk

Table of Contents

A. Course Identification

1. Credit hours: 03 Hours/Week
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: L6/Y3
4. Pre-requisites for this course (if any)**: Math 342**
5. Co-requisites for this course (if any)**:** **None**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	45	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	45
2	**Laboratory/Studio**	
3	**Tutorial**	
4	**Others** (specify)	
	Total	45

B. Course Objectives and Learning Outcomes

1. Course Description

The main purpose of this course is to provide students with the basic definitions in abstract algebra, abstract and logic thinking, the algebraic structures with more than one binary operation (rings and fields), an integral domain, the proofs in abstract algebra, and methods of solution.

2. Course Main Objective

-Students will be able to recognize the basic concepts of abstract algebra.
-Students will be able to solve problems using the properties of rings and fields.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Students will be able to recall the concepts of rings and field ideal and the basics of Euclidean Domain.	K1
2	**Skills :**	

CLOs		Aligned PLOs
2.1	Students will be able to solve complex problems of algebra using analytical methods.	S1
2.2	Students will be able to prove theorems of Rings and Fields theory.	S2
2.3	Demonstrate Proficiency in communicating concepts and theories of abstract algebra.	S4
3	**Values:**	
3.1	Students will be able to work effectively in groups.	V1
3.2	Students will develop manage duties and time.	V2

C. Course Content

No	List of Topics	Contact Hours
1,2	Definition and basic properties of a ring and field - Divisors of zero and cancellation – Integral domain Examples, definitions, theorems	6 Hrs
3,4	The characteristic of a ring - Quotient rings and ideals	6 Hrs
5,6	Definition and elementary properties of homomorphism	6 Hrs
6	**Mid-Exam#1**	
7	Maximal and Prime ideals – the relation of them	3 Hrs
8	Ring of polynomials -	3 Hrs
9	The division algorithm in F[x] – Irreducible polynomials	3 Hrs
10,11	Uniqueness of Factorization in F[x]	6 Hrs
11	**Mid-Exam#2**	
12	Euclidean Domain	3 Hrs
13	Conjugate classes and the class equation	3 Hrs
14	The Sylow theorem, Application to p-group	3 Hrs
15	Revision & Final Exam	3 Hrs
Total		**45 Hrs**

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Students will be able to recall the concepts of rings and field ideal and the basics of Euclidean Domain.	Introducing new ideas through case study Lectures Class Discussions	Quizzes I II Midterm Exams Final Exams homework assignments.
2.0	**Skills**		
2.1	Students will be able to solve complex problems of algebra using analytical methods.	- Lectures Group work - Case Study - Brainstorming	- Quizzes -Assignments -Midterm exams - Final exam
2.2	Students will be able to prove theorems of Rings and Fields theory.		
2.3	Demonstrate Proficiency in communicating concepts and theories		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	of abstract algebra.		
3.0	**Values**		
3.1	Students will be able to work effectively in groups.	Cooperative learning and Teamwork	- Quizzes -Assignments -Class participation
3.2	Students will develop manage duties and time.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Activities	Weekly basis	5%
2	Homework	Weekly basis	5%
3	Quizzes	Weekly basis	10%
4	Mid Exam1	6th week	20%
5	Mid Exam2	11th week	20%
6	Final Exam	At end of the Semester	40%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :
Six office hours per week.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	**A first course in Abstract Algebra, J. B. Fraigh, 6th ed.**
Essential References Materials	**Lee, Gregory T. Abstract algebra: An introductory course. Springer, 2018.**
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	1.Lecture Room with max capacity of 30 students and equipped with White Board, Overhead projector and internet connection. 2.Library
Technology Resources (AV, data show, Smart Board, software, etc.)	Projectors
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct and Indirect
Extent of achievement of course learning outcomes	Teachers	Direct
Quality of learning resources	Students	Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	The Curriculum committee
Reference No.	
Date	25/08/2021