



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

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A. Course Identification

1. Credit hours: 03 Hours/Week
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
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
1...		

CLOs		Aligned PLOs
2	Skills :	
2.1	Students will be able to solve Uniqueness of Factorization in $F[x]$.	S3
2.2	Students will be able to prove Sylow theorem and some of basic properties.	S2
2.3	Demonstrate Proficiency in communicating concepts and theories of abstract algebra.	S5
3	Values:	
3.1	Students will develop enhanced self-learning.	V1
3...	Students will be able to work independently and in groups.	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	Conjugacy 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 recognize the concepts of rings and field ideal.	Introducing new ideas through case study Lectures Class Discussions	Quizzes I II Midterm Exams Final Exams homework assignments.
1.2	Students will be able to recall the basic of Euclidean Domain.		
...			
2.0	Skills		
2.1	Students will be able to solve Uniqueness of Factorization in $F[x]$.	- Lectures Group work	- Quizzes -Assignments

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.2	Students will be able to prove sylow theorem and some of basic proprieties.	- Case Study - Brainstorming	-Midterm exams - Final exam
...	Demonstrate Proficiency in communicating concepts and theories of abstract algebra.		
3.0	Values		
3.1	Students will develop enhanced self-learning.	Cooperative learning and Teamwork	- Quizzes -Assignments -Class participation
3.2	Students will be able to work independently and in groups.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Home works and Assignments	Weekly basis	10%
2	First mid-term exam	5 th week	25%
3	Second mid-term exam	15 th week	25%
4	Final Exam	At End of 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	Gregory T. Lee, Abstract algebra: An introductory course (ISBN 978-3-319-77649-1) Springer Nature Switzerland (2018).
Essential References Materials	1. A first course in Abstract Algebra, J. B. Fraigh, 6th ed. 2. Ramji Lal, Algebra 1, (ISBN 978-981-10-4252-2), Springer Nature Singapore Pte Ltd (2017).
Electronic Materials	- https://ocw.mit.edu/courses/mathematics/
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,	Projectors

Item	Resources
etc.)	
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	Program and study plan committee
Reference No.	
Date	25/08/2021