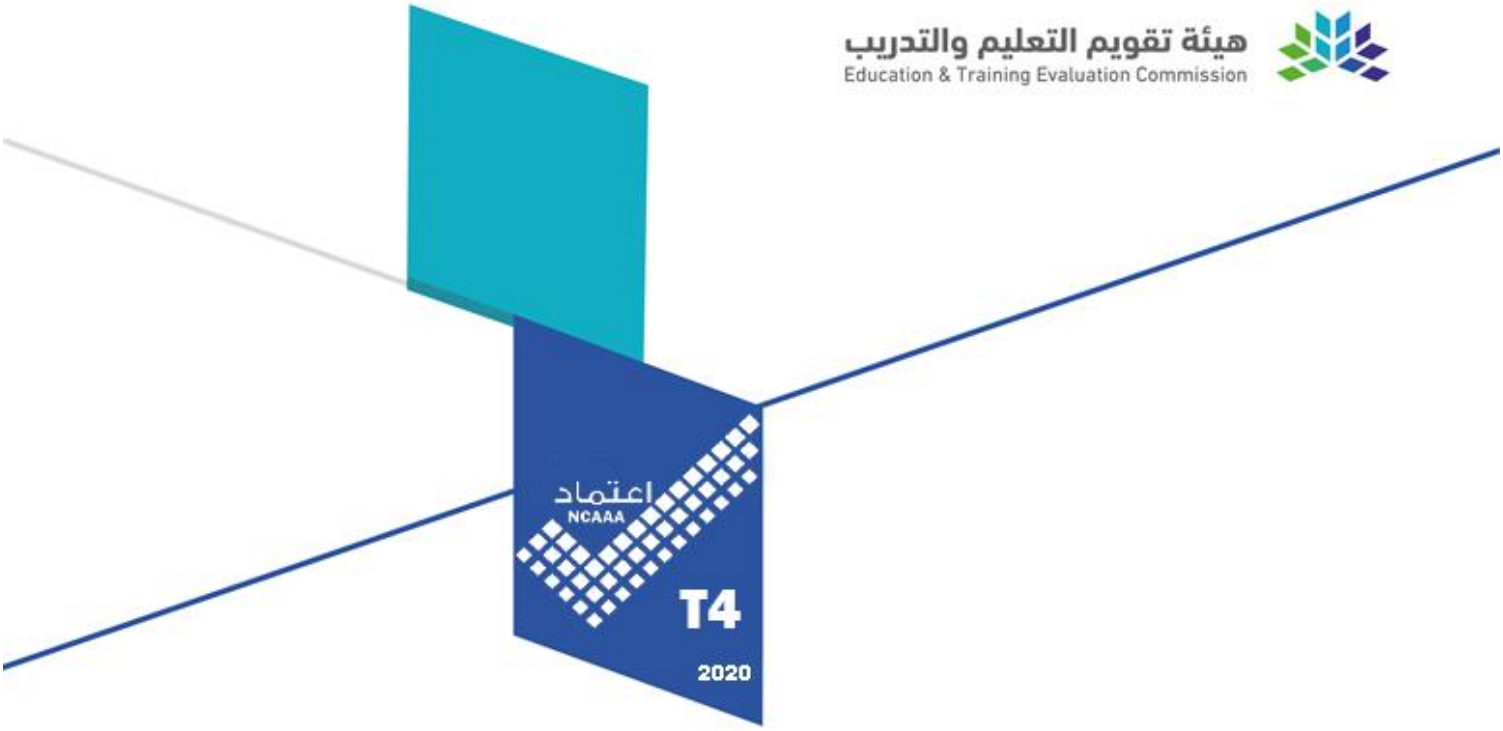
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Rings and Fields**
Course Code:	**MATH 4455**
Program:	**Bachelor of Science in Mathematics**
Department:	**Mathematics**
College:	**College of Science and Humanities Alkharj**
Institution:	**PRINCE SATTAM BIN ABDUALZIZ UNIVERSITY**

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A. Course Identification

1. Credit hours:	**04**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	Level 9
4. Pre-requisites for this course (if any)**:**	Math 2455
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**	04 hours a week	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	48
2	**Laboratory/Studio**	0
3	**Tutorial**	00
4	**Others** (specify) – (5 Office Hours in a week)	60
	Total	108

B. Course Objectives and Learning Outcomes

1. Course Description

Rings: Definitions – Basic Properties of Rings – Subring – Fields – Division Ring – Integral Domain – Characteristic of the Rings – Right and Left Ideal of the Ring – Quotient Rings – Principlal Ideal Domains – Unique Factorization – Gauss' Lemma – Explicit Factorization – Maximal Ideals – Gauss Primes – Quadratic Integers – Ideal Fractions – Ideal Classes – Relations in a Ring – Adjoining Elements – Polynomial Rings – Euclidean Rings – Ring Homomorphism – Ring Endomorphism – Fields: Algebraic Elements – Modules over rings – Sub modules – quotient modules.

2. Course Main Objective

The Objective is to make the students acquire knowledge about abstract algebraic structures such as Rings, Fields, Integral Domains- their properties, associated theorems and proof

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Able to define Ring, Integral Domain, Field, Subring, Ideal, Quotient Ring and their elementary properties	K1
1.2	Gain knowledge about Polynomial rings, division algorithm, reducibility concepts	K2
2	**Skills :**	
2.1	Able to ascertain whether a given set is a ring or not, type of ideals	S1
2.2	Able to find Subring, characteristic of a ring, compute zero of polynomial	S2

C. Course Content

No	List of Topics	Contact Hours
1	Review of Basic concepts	4
2	Defining of Rings and its Properties	4
3	Sub Rings	4
4	Division Ring, Integral Domain	4
5	Fields	4
6	Characteristic of a Ring – Ideals of a Ring	4
7	Quotient Rings	3
8	Principal Ideal Domain – Unique Factorization – Gauss Lemma	3
9	Explicit Factorisation – Maximal Ideals	3
10	Gauss Primes – Quadratic Integers – Ideal Fractions – Ideal Classes	3
11	Relations in a Ring – Adjoining Elements	3
12	Polynomial Rings – Ring Homomorphism	3
13	Ring Endomorphism	3
14	Algebraic Elements – Modules – Submodules – Quotient modules	3
Total		48

D. Teaching and Assessment

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

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
1.0	**Knowledge and Understanding**		
1.1	Able to define Ring, Integral Domain, Field, Subring, Ideal, Quotient Ring and their elementary properties	1. Class Room Lectures 2. Interactive sessions 3. Exclusive Office Hours for clearing doubts in small groups	1. Two Internal Exams 2. At least two Quiz 3. End Semester Exam
1.2	Gain knowledge about Polynomial rings, division algorithm, reducibility concepts		
2.0	**Skills**		
2.1	Able to ascertain whether a given set is a ring or not, type of ideals	1. Application oriented exercises	1. Homework 2. Assignments 3. Quiz 4. Exams
2.2	Able to find Subring, characteristic of a ring, compute zero of polynomial		

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
		2. Homework to improve the analytical skills	

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid Term Exam I	6	20%
2	Quiz	4 & 10	5%
3	Mid Term Exam II	13	20%
4	Continuous Assessment – Homework, Assignment, Attendance etc.	--	5%
5	End Semester Exam (Practical 10%, Theory 40%)	15	50%

***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 :

1. Exclusive Office Hours – 5 Hours per week
2. Academic Advising for Students – 1 Hour per week

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	- Artin M., "Algebra", Englewood Cliffs, NJ: Prentice–Hall, ISBN: 0130047635. - Herstein I.N, Abstract algebra, macmillam Inc, 1986 - Gallian J.A, contemporary abstract algebra 3rd edition D.C. heath company, 1994 - J.B.fraleigh , A first course in abstract algebra, 4th edition,adddison Wesley, 1989
Essential References Materials	NIL
Electronic Materials	
Other Learning Materials	Lecture Notes Prepared by the Department of Mathematics

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms with Smart boards with seating facilities for at least 30 students

Item	Resources
Technology Resources (AV, data show, Smart Board, software, etc.)	Smartboard, Internet Connection for Blackboard Computer Lab with software packages such as Excel etc.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Nil

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Course Evaluation	Quality Assurance Committee of the Department	Review all the course documents and course report
Peer Review	Senior Faculty Members / HoD	Attend the lecture and fill in a form
End Semester online survey	students	online survey

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

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	