Course Specifications

General Information

Course name	Abstract Algebra(2)
Course number	MATH3315
Faculty	
Department	
Course type	Major Needs
Course level	3
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - To understand the basic definitions in Ring Theory

2 - To be able to prove the basic theorems in ring theory and use it appropriately

3 - To solve contemporary problems according to ring theory results

4 - To explain certain algebraic facts using elementary principles

5 - To demonstrate the relationship of abstract algebra to other branches of mathematics and to related fields

Intended Learning Outcomes

Knowledge and Understanding	* State the main definitions for rings, subrings, integral domains, fields and subfields
	* State results about Ideals in a ring,quotient rings and characteristic of a ring
Intellectual Skills	* Prove basic results including fundamental theorems of ring homomorphisms and prime ideals
Professional Skills	* Calculate in various types of rings, such as polynomial rings,divisibility, greatest common divisor, and Factorization in F
	* Create examples to illustrate the underlying theory, and work with zeros of polynomials,gausss lemma and Eisenstein's criterion
	* Calculate in various types of rings, such as polynomial rings, the Gaussian integers, and certain factor rings
	* Create examples to illustrate the underlying theory, and work with these examples
General Skill	* Team work
	* Presentation skills

Course Contents

1 - Rings , sub ring , integral domains , fields and subfields , ideals, quotient rings
2 - Homomorphisms and isomorphisms , the fundamental theorem of ring homeomorphisms
3 - the characteristic of a ring , maximal ideals , prime ideals , polynomials over a ring
4 - divisibility and greatest common divisor , factorization Over a field
5 - zeros of a polynomial , gauss lemma , Eisenstein s criterion

Teaching and Learning Methods

1 - lectures, assignments and presntations

Students Assessment

Assessment Method	TIME	MARKS
First Mid Term	week 5	20
Homework , Attendance and participation	During semester	10
Second mid term	week 10	20
Final Exam	week 16	50

Books and References

Essential books	Linda Gilbert , Jimmie Gilbert (2015) Elements of modern algebra, 8th Edition
Recommended books	Farleigh, J. (1994) A first course in abstract algebra, Addison-Wesley, 5th Ed
	I .N. Herstein (1990) Abstract Algebrad ,Macmilling company ,2th
	Joseph A. Gallian (2002) Contemporary abstract algebra, Houghton Mifflin Company, 5th Ed