

Branch Name:	B.Sc. Mathematics
Program Code:	SC104
Course Name:	Abstract Algebra
Course Code:	2SC1040601
Pre-requisite Course:	

Course Objectives:

1. To understand the concept of Ring.
2. To understand the concept of polynomials.
3. To know about the Eisenstein Criterion for irreducibility.
4. To understand the concept of Field Extension and Algebraic Extension.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	--	--	3	70	30	--	--	100

Subject Contents:

Sr. No	Topic	Total Hours	Weightage (%)
1	Definition of a Ring and illustrations, Properties of a Ring, Zero divisors and Integral domain, Characteristic of an Integral Ring, Solution of the equation $ax = b$ in a ring R, Subrings, Ideals.	18	34
2	Introduction of Polynomials, Integral Domain $D[x]$, Familiar form of Integral domain $D[x]$, Unique factorization of Polynomials, Solutions of a Polynomial Equation, Eisenstein Criterion for irreducibility.	15	33
3	Field Extension, Algebraic Extension, The Transcendence of e , Roots of polynomials, Splitting field.	15	33

Reference Books:

1. I N Herstein, *Topics in Algebra*, Wiley Eastern Ltd.
2. N. Jacobson, *Basic Algebra Vol I & II*, Hindustan Publishing Company
3. Shanti Narayan, *A text book of Modern Algebra*, S.Chand & Co.
4. P.B.Bhattacharya, S.K.Jain, S R Nagpal, *Basics Abstract Algebra, (second Edition)*, Cambridge University Press.
5. N.S. Gopalkrishna, *University Algebra*, Wiley Eastern, New Delhi
6. Maclane Saunders and Birkhoff Garrett, *Algebra*, MacMillan, New York.
7. G.F.Simmons, *Introduction to Topology and Modern Analysis*, MacGrawHill Inc., U.S.A.

List of Open Source Software/learning website:

1. <https://www.youtube.com/watch?v=BVf5FFIbaaQ>
2. https://www.youtube.com/watch?v=BJ-_8Npj1DY
3. <https://www.youtube.com/watch?v=v8zqEoFmklU>

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Describe Properties of a Ring.	1 Remembering
CLO2	Discuss the knowledge on Characteristic of an Integral Ring.	2 Understanding
CLO3	Use Unique factorization of Polynomials and using it solve the example of its.	3 Applying
CLO4	Explain Field Extension.	4 Analysing
CLO5	Know the Polynomials to Justify the Solutions of a Polynomial equation.	5 Evaluating
CLO6	Create an example splitting field.	6 creating

Mapping of CLOs with Pos & PSOs:

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1		L	H						M				M	L		
CLO2		L			L				M					M		L
CLO3	L			L			L						L			M
CLO4	L			L			L						M			L
CLO5		H							M		L		H	L		L
CLO6		L	H		M				L	L		L		M		L

H: High, M: Medium, L: Low