SKILL ENHANCEMENT IN ALGEBRA AND ANALYSIS

Semester	Subject Code	Category	Lecture		Theory		Practical	Credits
II	POCMA1SS	Optional	Hrs/week	Hrs/Sem	Hrs/week	Hrs/Sem	0	2
			-	-	-	-		

COURSE OBJECTIVES

The students will be able to

- To prepare the students to develop the in- depth knowledge in Algebra and Analysis.
- To Crack lectureship and fellowship exams approved by UGC like CSIR – NET and SET.

COURSE OUTCOMES:

On the successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Study the concept of Group Theory.	K2
CO2	Acquire the knowledge of permutations.	K3
CO3	Understand and analyze the concept of Rings and fields.	K4
CO4	Develop the knowledge about set theory and real number system.	K4
CO5	Develop and apply complex number and analytic function in finding solutions to the problems.	K4

Knowledge Level: K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze.

MAPPING WITH PROGRAMME OUTCOMES:

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	M	M	M	S	M
CO2	M	S	M	S	M	S
CO3	S	M	S	M	M	S
CO4	S	M	M	M	M	M
CO5	S	S	S	M	S	M

S- Strong; M-Medium; L-Low

UNIT I: Groups

Introduction to Groups – Sub Groups – Coset - Ablian Group - Normal Sub Groups - Cyclic Groups. Quotient Groups - Direct Products - Some important Groups - Homomorphism - Normalizer of Subgroups - Centralizer of an Element or Normalizer of an Element - Commutator Subgroups – Fundamental theorem of Finite Abelian groups – Number of Non isomorphic Ablian Groups - Sylows theorem.

UNIT II: Permutations

Permutations – Symmetric Group S_n – Alternating Group An – Conjugacy Classes and Conjugacy Relation.

UNIT III: Rings and Fields

Rings-Ideals, Prime and maximal ideals,Quotient Rings, Fields,Finite Fields-Field Extensions-Galois Theory.

UNIT IV: Set theory and Real Number System

Elementary Set Theory – Finite Countable and Uncountable Sets – Real number system as a complete ordered field –Archimedean property-Supremum-Infimum-Sequence and series-convergence- limit sup-limit inf-Bolzano Weirstrass theorem- Heine Boral theorem.

UNIT V: Complex Number and Analytic functions

Algebra and complex numbers- The complex plane –polynomials-power series-Transcendental functions such as Exponential, Trignometry and Hyperbolic and function –Analytic function.

TEXT BOOKS:

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	I.N.Herstein	Topics in Algebra	Wesley Wiley Eastern Limited, New Delhi	1975, II Edition
2.	Walter Rudin	Real Analysis	Narosa Publishing House,New Delhi	1999.

REFERENCE BOOKS:

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	M.Artin	Algebra	Prentice Hall of India	1991
2	P.B.Bhattacharya, S.K.Jain, and S.R.Nagpaul	Basic Abstract Algebra	Cambridge University Press	1997

WEB SOURCES:

1. http://www.math.toronto.edu/ivrii/PDE-textbook/

2. https://www.math.ust.hk/-machas/differential-equation pdf

TEACHING METHODOLOGY:

1. Class room Teaching

2. Assignments

3. Seminars

4. Discussions

5 .PPT Presentations

SYLLABUS DESIGNER:

 1. Mrs. R.Ramya , Assistant Professor of Mathematics.