### ALGEBRA

Semester	Subject Code	Category	Lect	ture	The	ory	Practical	Credits
Ι	21CMA1A	Core I	Hrs/week	Hrs/Sem	Hrs/week	Hrs/Sem	0	4
			5	75	5	75		

#### **COURSE OBJECTIVES:**

The students will be able to

- Develop their knowledge in Theory of Equations, Summation of Series, Matrices, Continued Fraction and Elementary Number Theory.
- Improve the problem-solving skills in Algebra.

### **COURSE OUTCOMES:**

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

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Perceive the concepts of Polynomial Equation and to solve it	К3
CO2	Solve the problems using Horner's method and Newton's method	К3
CO3	Gain expertise in the concept of Summation of Series	К2
CO4	Study the types of matrices, Cayley Hamilton theorem and Diagonalisation of a Matrix	K2
C05	Acquire practical knowledge in the field of elementary number theory	K4

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

# MAPPING WITH PROGRAMME OUTCOMES

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

S- Strong; M-Medium; L-Low

# **UNIT-IV: MATRICES**

Symmetric, Skew Symmetric, Hermitianand Skew Hermitian Matrices- Orthogonal and Unitary Matrices - Rank of Matrix- Consistency and Solutions of Linear Systems- Cayley Hamilton Theorem (without proof)- Eigen Values-Eigen Vectors-Similar Matrices-Diagonalisation of a Matrix.

Binomial, Exponential and Logarithmic series (Theorems without proofs) – Simple Problems.

#### **UNIT - V: ELEMENTARY NUMBER THEORY**

Prime Number-Composite Number-Decomposition of a Composite Number as a Product of Primes Uniquely (without proof)-Divisors of a positive integer-Congruence Modulo n-Euler Function(without proof)- Highest power of a Prime Number p contained in n!-Fermat's and Wilson's Theorems

#### **DISTRIBUTION OF MARKS: THEORY10% AND PROBLEMS: 90%**

#### **TEXT BOOK**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	T.K.ManickavachagomPillay, T.N.Natarajan and K.S.Ganapathy Volume I &II.	Algebra	S.Viswanathan Printers & Publishes Pvt. Ltd.	2004

Descartes Rule of Signs - Approximate Solutions of Polynomials by Horner's method-Newton's method.

**UNIT-III: SUMMATION OF SERIES** 

**UNIT- II: THEORY OF EQUATIONS [Contd.]** 

#### **UNIT-I: THEORY OF EQUATIONS**

Polynomial Equation – Imaginary and Irrational roots – Symmetric Function of roots in terms of Coefficient – Sum of r<sup>th</sup>powers of roots – Reciprocal Equation – Transformation of Equation.

# **15 Hours**

# **15 Hours**

**15Hours** 

**15 Hours** 

# **15 Hours**

# **REFERENCE BOOKS**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	S.Arumugam	Algebra	New Gamma Publishing House	2003
2.	A.Singaravelu	Algebra and Trignometry	Meenakshi Agency	2003

#### **WEB RESOURCES**

 $1.\ http://lib1.org/\_ads/390EDD85BC279835BA7847DA4724CB9C$ 

# **TEACHING METHODOLOGY**

- 1. Class room Teaching
- 2. Assignments
- 3. Seminars
- 4. Discussions
- **5**.PPT Presentations

# SYLLABUS DESIGNER

- 1. Dr. Nithyapriya, Assistant Professor of Mathematics.
- 2. Mrs. C. Revathi, Assistant Professor of Mathematics.