Department of Mathematics
M.Sc., Mathematics
(2017-2018)

Program Outcomes:

S.No	OUTCOMES
PO1	Acquire in-depth knowledge of Mathematics both in theory and application.
PO2	Identify mathematical and computational methods in order to solve comprehensive problems.
PO3	Recognize the various specialized areas of advanced mathematics and its applications.
PO4	Analyze and interpret data to create and design new knowledge for complex problems.
PO5	Developthemathematicalmodelsfortheapplicationsofmathematicsinreallifesituations.
PO6	Exhibit the potential to effectively accomplish tasks independently and as a member or leader indiverseteams, and in multi disciplinary settings.
PO7	Develop the skills to crack the various competitive examinations.
PO8	Abilitytoengageinlife-longlearninginthecontextoftherapiddevelopmentsinthefield.
PO9	Demonstrate the ability to write dissertations, reports, make effective presentations and documentation.
P10	Commitment to professional ethics and social responsibilities.

Program Specific Outcomes:

S.No	OUTCOMES
PSO1	Prepare and Motivate Students for Research Studies in Mathematics and Related Fields.
PSO2	Provide Advanced Knowledge on Topics in Pure Mathematics, Empowering the Students to Pursue Higher Degrees at Reputed Academic Institutions.
PSO3	Having an Ability to use Mathematics in Techniques, Skills, Resources on Real Life
PSO4	Having Problem Solving Ability- to Assess Social Issues (Societal, Health, Safety, Legal and Cultural) as a Mathematician.
PSO5	Having Adaptive Thinking and Adaptability in Relation to Environmental Context and Sustainable Development.
PSO6	Having a Clear Understanding of Professional and Ethical Responsibility.

Semester: I

Subject Name: Algebra -I **No. of Hours per Week:** 06

Subject Code: MMA11 **Credit:** 05

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
I (Regulation 2017-2018)	Algebra-I	05	CO1 Demonstrate ability to think group actions critically by Cayley‟s theorem and apply the Sylow‟s theorems to describe the structure of certain finite abelian groups CO2 Understand the concept of the internal and external direct product of groups. Also, apply the structure theorem on abelian groups to find the non-isomorphic abelian groups of certain orders. CO3 Check the irreducibility of given polynomial in the defined Field CO4 Know about Module and, difference between the Algebraic structures, Vector space and Module. CO5 Acquire the knowledge of the Linear transformation in canonical forms. Also, the matrix form of linear transformation and its properties.

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	**S**	**S**	**M**	**M**	**M**	**S**	**M**	**S**	**S**	**S**
CO2	**S**	**S**	**M**	**M**	**M**	**S**	**M**	**S**	**S**	**S**
CO3	**S**	**S**	**M**	**M**	**S**	**S**	**M**	**S**	**S**	**S**
CO4	**S**	**S**	**M**	**M**	**S**	**S**	**M**	**S**	**S**	**S**
CO5	**S**	**S**	**M**	**M**	**S**	**S**	**M**	**S**	**S**	**S**

* PO – Programme Outcome, CO – Course Outcomes * S – Strong, M – Medium, L – Low

Semester: I

Subject Name: Real Analysis– I **No. of Hours per Week:** 06

Subject Code: MMA12 **Credit:** 05

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
I (Regulation 2017-2018)	Real Analysis– I	05	CO1Understandtheconceptoffunctionsofbounde dvariation. CO2 Acquires knowledge on Riemann Stieltjes integration andtosolveitsrelatedproblems. CO3 Work effectively in integration under integral sign. CO4 Provide a strong foundation in the study of the convergence of infinite series, infinite product and uniform convergence and its interplay between various limiting operations. CO5 Know about the convergence of sequences of functions

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	**S**	**S**	**M**	**M**	**S**	**M**	**S**	**S**	**S**	**M**
CO2	**S**	**S**	**M**	**M**	**S**	**M**	**S**	**S**	**S**	**M**
CO3	**S**	**S**	**M**	**M**	**S**	**M**	**S**	**S**	**S**	**M**
CO4	**S**	**S**	**M**	**M**	**S**	**M**	**S**	**S**	**S**	**M**
CO5	**S**	**S**	**M**	**M**	**S**	**M**	**S**	**S**	**S**	**M**

PO – Programme Outcome, CO – Course Outcomes S – Strong, M – Medium, L – Low

Semester: I

Subject Name: Ordinary Differential Equations **No. of Hours per Week:** 06

Subject Code: MMA13 **Credit:** 04

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
I (Regulation 2017-2018)	Ordinary Differential Equations	04	CO1 Analyze the methods of second order homogeneous and non-homogeneous equations. CO2 Apply and solve the higher order homogeneous and non-homogeneous equations. CO3 Define the methods to solve linear equations with variable coefficients. CO4 Discuss the linear equations with regular singular points. CO5 Construct the solutions for first order equations.

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	S	M	S	S	M	L
CO2	S	S	M	L	S	M	S	S	M	M
CO3	S	S	M	S	M	S	M	M	M	S
CO4	S	S	M	M	M	S	M	M	M	S
CO5	S	S	M	L	S	S	S	S	M	M

PO – Programme Outcome, CO – Course Outcomes S – Strong, M – Medium, L – Low

Semester: I

Subject Name: Differential Geometry **No. of Hours per Week:** 06

Subject Code: MMA34 **Credit:** 05

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
I (Regulation 2017-2018)	Differential Geometry	05	**CO1** Understand the concept of a space curve and compute its curvature and torsion. **CO2** Acquire the knowledge of curves on a surfaceand its intrinsic properties. **CO3** Analyze the geodesics and its normal properties and also familiar with Gauss Bonnet Theorem. **CO4** Determine the second fundamental form and developable associated with space curves. **CO5** Know Hilbert‟s Lemma and the fundamental existence theorem for surface theory.

Mapping with Learning outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	L	M	S	L	S	S	L	M
CO2	S	S	M	L	S	L	S	S	M	M
CO3	S	S	M	M	S	L	S	S	M	M
CO4	S	S	M	M	S	L	S	S	M	M
CO5	S	S	M	M	S	L	S	S	M	M

PO – Programme Outcome, CO – Course Outcomes S – Strong, M – Medium, L – Low

Semester: I

Subject Name: Discrete Mathematics **No. of Hours per Week:** 06

Subject Code: MEMA35B **Credit:** 03

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
I (Regulation 2017-2018)	Discrete Mathematics	03	CO1 Know the algebraic structures of lattices and Boolean algebra, and sketch the minimization of Boolean polynomials. CO2Model the switching circuits with applications. CO3 Understand the finite fields and its mathematics properties. CO4 Acquire the notions of the polynomials over finite fields, Irreducibility and factorization of polynomials. CO5Apply the coding theory with the linear and cyclic codes in cryptography.

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	M	S	S	S	S	S
CO2	S	S	M	M	S	S	S	S	S	S
CO3	S	S	M	M	M	S	S	S	S	S
CO4	S	S	M	M	M	S	S	S	S	S
CO5	S	S	M	M	S	S	S	S	S	S

*PO – Programme Outcome, CO – Course Outcome.

*S – Strong, M – Medium, L – Low.

Semester: II

Subject Name: Algebra -II **No. of Hours per Week:** 06

Subject Code: MMA21 **Credit:** 05

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
II (Regulation 2017-2018)	Algebra-II	05	CO1 Understand fundamental concepts including extension fields, Algebraic extensions and Algebraic numbers. CO2 Determine existence and properties of extension fields of polynomials CO3 Demonstrate capacity of illustration for mathematical reasoning through analyzing, proving and explaining concepts from filed extensions and Galois theory CO4 Apply knowledge of solvability of radicals over polynomials on finite fields CO5 Analyze the theorems related to division rings to apply them on relevant fields

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	**S**	**S**	**M**	**M**	**M**	**M**	**S**	**S**	**S**	**S**
CO2	**S**	**S**	**M**	**M**	**M**	**S**	**S**	**S**	**S**	**S**
CO3	**S**	**S**	**M**	**M**	**M**	**M**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**M**	**M**	**M**	**S**	**S**	**S**	**S**	**S**
CO5	**S**	**S**	**M**	**M**	**M**	**M**	**S**	**S**	**S**	**S**

PO – Programme Outcome, CO – Course Outcomes S – Strong, M – Medium, L – Low

Semester: II

Subject Name: Real Analysis-II **No. of Hours per Week:** 06

Subject Code: MMA22 **Credit:** 05

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
II (Regulation 2017-2018)	Real Analysis-II	05	CO1 know about the properties of Lebesgue integrals and establish the Levi monotone convergence theorem. CO2 develop the properties of inner products, norms and measurable functions. CO3 understand the concept of Fourier Series and Integrals. CO4 acquire the knowledge of multivariable calculus. CO5 enrich the students to work effectively on implicit functions and the extremum values of functions.

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	**S**	**S**	**M**	**M**	**S**	**M**	**S**	**S**	**S**	**M**
CO2	**S**	**S**	**M**	**M**	**S**	**M**	**S**	**S**	**S**	**M**
CO3	**S**	**S**	**M**	**M**	**S**	**M**	**S**	**S**	**S**	**M**
CO4	**S**	**S**	**M**	**M**	**S**	**M**	**S**	**S**	**S**	**M**
CO5	**S**	**S**	**M**	**M**	**S**	**M**	**S**	**S**	**S**	**M**

PO – Programme Outcome, CO – Course Outcomes S – Strong, M – Medium, L – Low

Semester: II

Subject Name: Partial Differential Equations **No. of Hours per Week:** 06

Subject Code: MMA23 **Credit:** 05

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
II (Regulation 2017-2018)	Partial Differential Equations	05	CO1 Analyze the methods for first order partial differential equations. CO2 Understand the fundamentals of second order partial differential equations. CO3 Define the methods to solve elliptical differential equations. CO4 Discuss the formation and solutions of parabolic differential equations. CO5 Construct the solutions for hyperbolic differential equations and identify the research problem where PDE can be used to model the problem.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	M	S	M	S	M	M
CO2	S	S	M	M	M	S	M	S	M	S
CO3	S	S	S	M	M	S	S	M	M	S
CO4	S	S	S	M	M	M	S	M	M	S
CO5	S	S	S	M	M	M	S	M	M	S

PO – Programme Outcome, CO – Course Outcomes S – Strong, M – Medium, L – Low

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Semester: II

Subject Name: Mechanics **No. of Hours per Week:** 06

Subject Code: MMA24 **Credit:** 04

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
II (Regulation 2017-2018)	Mechanics	04	1. After studied unit -1, the student will be able to know about the forces and equilibrium of a particle. 2. After studied unit -2, the student will be able to identify the parallel forces and couples and solve related problems. 3. After studied unit -3, the student will be able to demonstrate knowledge of friction and its applications. 4. After studied unit -4, the student will be able to carry out problems related to impact and laws of impact. 5. After studied unit -5, the student will be able to demonstrate knowledge of the central orbits

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	M	S	M	S	M	M
CO2	S	S	M	M	M	S	M	S	M	S
CO3	S	S	S	M	M	S	S	M	M	S
CO4	S	S	S	M	M	M	S	M	M	S
CO5	S	S	S	M	M	M	S	M	M	S

PO – Programme Outcome, CO – Course Outcomes S – Strong, M – Medium, L – Low

Semester: II

Subject Name: Calculus of Variations &Integral Equations **No. of Hours per Week:** 05

Subject Code: MEMA25B **Credit:** 03

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
II (Regulation 2017-2018)	Calculus of Variations &Integral Equations	04	1. After studied unit -1, the student will be able to know about the forces and equilibrium of a particle. 2. After studied unit -2, the student will be able to identify the parallel forces and couples and solve related problems. 3. After studied unit -3, the student will be able to demonstrate knowledge of friction and its applications. 4. After studied unit -4, the student will be able to carry out problems related to impact and laws of impact. 5. After studied unit -5, the student will be able to demonstrate knowledge of the central orbits

Mapping with Learning outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	M	S	S	M	M	S
CO2	S	S	S	M	S	S	S	M	M	S
CO3	S	S	M	M	M	M	S	M	S	M
CO4	S	S	S	S	S	M	S	M	S	M
CO5	S	S	S	M	S	M	S	M	S	M

* PO – Programme Outcome, CO – Course Outcomes

S – Strong, M – Medium, L – Low

Semester: III

Subject Name: Complex Analysis – I **No. of Hours per Week:** 06

Subject Code: MMA31 **Credit:** 05

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
III (Regulation 2017-2018)	Complex Analysis – I	05	**CO1** Understand the notions of differentiability, analyticity, power series and its consequences. **CO2** Comprehend the complex integration, Cauchy theorem and its properties. **CO3** Know the conformal mappings and Mobius transformations. **CO4** Acquire the concepts of maximum principle, Schwarz‟s lemma and Liouville‟s theorem. **CO5** Procure the singularities and its classification.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	M	S	S	S	S	S
CO2	S	S	M	M	M	S	S	S	S	S
CO3	S	S	M	M	M	S	S	S	S	S
CO4	S	S	M	M	M	S	S	S	S	S
CO5	S	S	M	M	M	S	S	S	S	S

PO – Programme Outcome, CO – Course Outcome S – Strong, M – Medium, L – Low.

Semester: III

Subject Name: Topology **No. of Hours per Week:** 06

Subject Code: MMA32 **Credit:** 05

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
III (Regulation 2017-2018)	Topology	05	**CO1** Know the basics on open and closed sets and the significance of the topological spaces. **CO2** Comprehend the continuous functions on topological spaces, product topology and topology induced by the metric. **CO3** Understand the connected spaces, connected subspaces, components and local connectedness. **CO4** Acquire the notions of compactness, compact subspaces, limit point compactness and localcompactness. **CO5** Procure the strong theoretical background about the count ability axioms, the separationaxioms and the consequences theorems.

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	M	S	S	S	S	S
CO2	S	S	M	M	M	S	S	S	S	S
CO3	S	S	M	M	M	S	S	S	S	S
CO4	S	S	M	M	M	S	S	S	S	S
CO5	S	S	M	M	M	S	S	S	S	S

PO – Programme Outcome, CO – Course Outcome. S – Strong, M – Medium, L – Low.

Semester: III

Subject Name: Operations Research **No. of Hours per Week:** 06

Subject Code: MMA33 **Credit:** 05

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
III (Regulation 2017-2018)	Operations Research	05	CO1 -To Explain Types of Integer Linear Programming Problems - CO2 - To Evaluation Concept of Cutting Plane - Gomory's All Integer Cutting Plane Method CO3 - To Solve Characteristics of Dynamic Programming Problem - Developing Optimal Decision Policy CO4 –To Find – Dynamic Programming Under Certainty CO5 - To Explain Unconstrained Optimization - Constrained Multi-variable Optimization with Equality Constraints CO6 - To Solve Standard forms for Revised simplex Method CO7 - To Explain Steps in Decision theory Approach

Mapping with Learning outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	L	M	S	L	S	S	L	M
CO2	S	S	M	L	S	L	S	S	M	M
CO3	S	S	M	M	S	L	S	S	M	M
CO4	S	S	M	M	S	L	S	S	M	M
CO5	S	S	M	M	S	L	S	S	M	M

PO – Programme Outcome, CO – Course Outcome. S – Strong, M – Medium, L – Low.

Semester: III

Subject Name: Probability Theory **No. of Hours per Week:** 06

Subject Code: MMA34 **Credit:** 05

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
III (Regulation 2017-2018)	Probability Theory	05	CO1 Analyze the basics of probability and random variables. CO2 Understand to handle parameters of the distribution. CO3 Define the properties and functionalities of characteristic functions. CO4 Discuss the various special probability distributions. CO5 Construct the solutions for real time applications using limits theorem.

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	S	M	M	M	M
CO2	S	S	S	S	M	S	M	M	S	M
CO3	S	S	S	S	M	M	M	S	M	M
CO4	S	S	M	M	S	M	M	S	S	S
CO5	S	S	M	S	M	M	M	S	S	S

PO – Programme Outcome, CO – Course Outcomes S – Strong, M – Medium, L – Low

Semester: III

Subject Name: Fluid Dynamics **No. of Hours per Week:** 06

Subject Code: MEMA35C **Credit:** 03

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
III (Regulation 2017-2018)	Fluid Dynamics	03	**CO1** Understand the concepts of kinematics of fluids in motions. **CO2** Find the pressure at a point in a moving fluid. **CO3** Discuss Stokes stream function. **CO4** Analyse complex velocity potential for standard two dimensional flows. **CO5** Derive the Navier – Stokes equations of motion of a Viscous fluid.

Mapping With Learning Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	L	L	S	L	S	S	L	M
CO2	S	S	M	M	S	L	S	S	L	M
CO3	S	S	M	M	S	L	S	S	L	L
CO4	S	S	M	S	S	L	S	S	M	L
CO5	S	S	M	M	S	L	S	S	L	M

* PO – Programme Outcome, CO – Course Outcomes

* S – Strong, M – Medium, L – Low

Semester: IV

Subject Name: Complex Analysis – II **No. of Hours per Week:** 06

Subject Code: MMA41 **Credit:** 05

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
IV (Regulation 2017-2018)	Complex Analysis – II	05	**CO1** Understand the concepts of residues and its properties. **CO2** Evaluate the contour integrals and its applications. **CO3** Know the analytic continuation and Poisson integral formula. **CO4**Acquire the representations of meromorphic and entire functions. **CO5** Procure the applications of open mapping, Hurwitz and Riemann mapping theorems.

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	M	S	S	S	S	S
CO2	S	S	M	M	M	S	S	S	S	S
CO3	S	S	M	M	M	S	S	S	S	S
CO4	S	S	M	M	M	S	S	S	S	S
CO5	S	S	M	M	M	S	S	S	S	S

*PO – Programme Outcome, CO – Course Outcome.

*S – Strong, M – Medium, L – Low.

Semester: IV

Subject Name: Functional Analysis **No. of Hours per Week:** 06

Subject Code: MMA42 **Credit:** 05

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
IV (Regulation 2017-2018)	Functional Analysis	05	**CO1**Analysethe Banach space with examples and Able to work comfortably with Continuous linear transformations **CO2** Apply the conjugate operator and acquire the knowledge of open mapping theorem. **CO3** Discuss about the Hilbert spaces. **CO4** Acquire the knowledge of Banach Algebra and Outline of spectral radius. **CO5** Construct the Gelfand-Neumark theorem.

Mapping with Learning Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	**S**	**S**	**M**	**M**	**S**	**S**	**S**	**S**	**M**	**S**
CO2	**S**	**S**	**M**	**M**	**S**	**S**	**S**	**S**	**M**	**S**
CO3	**S**	**S**	**M**	**M**	**S**	**S**	**S**	**S**	**M**	**S**
CO4	**S**	**S**	**M**	**M**	**S**	**S**	**S**	**S**	**M**	**S**
CO5	**S**	**S**	**M**	**M**	**S**	**S**	**S**	**S**	**M**	**S**

* PO – Programme Outcome, CO – Course Outcomes

* S – Strong, M – Medium, L – Low

Semester: IV

Subject Name: Mathematical Statistics **No. of Hours per Week:** 06

Subject Code: MMA43 **Credit:** 05

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
IV (Regulation 2017-2018)	Mathematical Statistics	05	**CO1** Know the basic notions of sample, population, sample moments and their functions. **CO2** Comprehend the parametric and non-parametric tests for small and large samples. **CO3** Understand the various measures of estimation theory. **CO4** Acquire the knowledge in the concept of ANOVA and, apply them in real life situationsfor testing of hypothesis. **CO5** Procure the strong background about the sequential analysis and its

Mapping with Learning Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**
CO3	**S**	**S**	**S**	**S**	M	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**S**	**S**	S	**S**	**S**	**S**	**S**	**S**
CO5	**S**	**S**	**S**	**S**	M	**S**	**S**	**S**	**S**	**S**

PO – Programme Outcome, CO – Course Outcomes S – Strong, M – Medium, L – Low

Semester: IV

Subject Name: Difference Equations **No. of Hours per Week:** 06

Subject Code: MMA44 **Credit:** 04

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
IV (Regulation 2017-2018)	Difference Equations	04	CO1 – To Explain Difference Calculus - General Theory of Linear Difference Equations CO2 – To Find Method of Undetermined coefficients, the method of variation of constants CO3 - To Solve Autonomous System - The Basic Theory - The Jordan form CO4 –To Explain Definition, Example and properties of Z-transform CO5 – To Find Volterra Difference Equation of convolution types

Mapping with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	S	M	M	M	M
CO2	S	S	S	S	M	S	M	M	S	M
CO3	S	S	S	S	M	M	M	S	M	M
CO4	S	S	M	M	S	M	M	S	S	S
CO5	S	S	M	S	M	M	M	S	S	S

PO – Programme Outcome, CO – Course Outcomes S – Strong, M – Medium, L – Low

Semester: IV

Subject Name: Number theory and Cryptography **No. of Hours per Week:** 06

Subject Code: DEMA45A **Credit:** 03

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
IV (Regulation 2017-2018)	Number theory and Cryptography	03	**CO1** Acquire the knowledge of elementary number theory **CO2** Apply various cryptosystems and understand the concepts of quadratic, residues and reciprocity **CO3** Develop the idea of public key cryptography, RSA Algorithms. **CO4** Solve problems using the continued fraction method and the quadratic sievemethod. **CO5** Demonstrate ability to apply concepts of Fermat factorization and factor bases

Mapping with Learning outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	**S**	**S**	**S**	**M**	**M**	**M**	**S**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**M**	**M**	**S**	**S**	**S**	**S**	**S**
CO3	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**S**	**S**
CO5	**S**	**S**	**S**	**M**	**S**	**M**	**S**	**S**	**S**	**S**

* PO – Programme Outcome, CO – Course Outcomes

* S – Strong, M – Medium, L – Low