

Krishnasamy College of Science, Arts and Management For Women, Cuddalore

Department of Mathematics

COURSE OUTCOMES WITH MAPPING

2023-2024

Program: B.Sc. MATHEMATICS

Program Code: 201

SEMESTER I

COURSE CODE :23UMATC13

COURSE TITLE : ALGEBRA & TRIGONOMETRY

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CLO 1: Classify and Solve reciprocal equations

CLO 2: Find the sum of binomial, exponential and logarithmic series

CLO 3: Find Eigen values, eigen vectors, verify Cayley – Hamilton theorem and diagonalize a given matrix

CLO 4: Expand the powers and multiples of trigonometric functions in terms of sine and cosine

CLO 5: Determine relationship between circular and hyperbolic functions and the summation of trigonometric series

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	-	-	-	3	2	1
CLO2	2	1	3	1	-	-	3	2	1
CLO3	3	1	3	1	-	-	3	2	1
CLO4	3	1	3	-	-	-	3	2	1
CLO5	3	1	3	-	-	-	3	2	1

COURSE CODE :23UMATC14

COURSE TITLE : DIFFERENTIAL CALCULUS

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CLO 1: Find the nth derivative, form equations involving derivatives and apply Leibnitz formula

CLO 2: Find the partial derivative and total derivative coefficient

CLO 3: Determine maxima and minima of functions of two variables and to use the Lagrange's method of undetermined multipliers

CLO 4: Find the envelope of a given family of curves

CLO 5: Find the evolutes and involutes and to find the radius of curvature using polar co-ordinates

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	-	-	-	3	2	1
CLO2	2	1	3	-	-	-	3	2	1
CLO3	3	2	3	2	-	-	3	2	1
CLO4	3	2	3	2	1	-	3	2	1
CLO5	3	2	3	2	1	-	3	2	1

COURSE CODE :PYTHON PROGRAMMING

COURSE TITLE :23UPYPE15

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CLO1: Develop and execute simple Python programs

CLO2: Write simple Python programs using conditionals and looping for solving problems

CLO3: Decompose a Python program into functions

CLO4: Read and write data from/to files in Python programs

CLO5: Usage of Classes and Objects in python

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	-	-	-	3	2	1
CLO2	2	1	3	1	-	-	3	2	1
CLO3	3	1	3	1	-	-	3	2	1
CLO4	3	1	3	-	-	-	3	2	1
CLO5	3	1	3	-	-	-	3	2	1

COURSE CODE :BRIDGE MATHEMATICS

COURSE TITLE : 23UMATF17

Course Learning Outcome

After completion of this course successfully, the students will be able to

CLO 1: Prove the binomial theorem and apply it to find the expansions of any $(x + y)^n$ and also, solve the related problems

CLO 2: Find the various sequences and series and solve the problems related to them. Explain the principle of counting.

CLO 3: Find the number of permutations and combinations in different cases. Apply the principle of counting to solve the problems on permutations and combinations

CLO 4: Explain various trigonometric ratios and find them for different angles, including sum of the angles, multiple and submultiple angles, etc. Also, they can solve the problems using the transformations.

CLO 5: Find the limit and derivative of a function at a point, the definite and indefinite integral of a function. Find the points of min/max of a function.

Mapping of Course Learning Outcomes (CLOs) with Programme Learning Outcomes (PLOs) and Programme Specific Outcomes (PSOs)

	POs						PSOs	
	1	2	3	4	5	6	1	2
CLO1	3	1	3	1	2	1	1	3
CLO2	2	3	1	2	2	3	2	1
CLO3	3	3	2	2	2	1	2	1
CLO4	2	3	3	2	1	3	2	1
CLO5	1	2	3	1	3	3	2	1

COURSE CODE: 23UCSCN16

COURSE TITLE: OFFICE AUTOMATION

Course Outcomes:

- Understand the basics of computer systems and its components.
- Understand and apply the basic concepts of a word processing package.
- Understand and apply the basic concepts of electronic spreadsheet software.
- Understand and apply the basic concepts of data base management system.
- Understand and create a presentation using Power Point tool.

SEMESTER II

COURSE CODE :23UMATC23

COURSE TITLE : ANALYTICAL GEOMETRY OF THREE DIMENSION

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CLO 1: Find pole, polar for conics, diameters, conjugate diameters for ellipse and hyperbola

CLO 2: Find the polar equations of straight line and circle, equations of chord, tangent and normal and to find the asymptotes of hyperbola

CLO 3: Explain in detail the system of Planes

CLO 4: Explain in detail the system of Straight lines

CLO 5: Explain in detail the system of Spheres

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	2	2	2	1	-	-	3	2	1
CLO2	2	2	2	1	-	-	3	2	1
CLO3	3	2	2	1	-	-	3	2	1
CLO4	3	2	3	1	-	-	3	2	1
CLO5	3	2	3	1	-	-	3	2	1

COURSE CODE :23UMATC24

COURSE TITLE : INTEGRAL CALCULUS

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CLO 1: Determine the integrals of algebraic, trigonometric and logarithmic functions and to find the reduction formulae

CLO 2: Evaluate double and triple integrals and problems using change of order of integration

CLO 3: Solve multiple integrals and to find the areas of curved surfaces and volumes of solids of revolution

CLO4: Explain beta and gamma functions and to use them in solving problems of integration

CLO 5: Explain Geometric and Physical applications of integral calculus

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	-	-	-	3	2	1
CLO2	3	1	3	-	-	-	3	2	1
CLO3	3	1	3	-	-	-	3	2	1
CLO4	3	1	3	-	-	-	3	2	1
CLO5	3	1	3	-	2	1	3	2	1

COURSE CODE :23UPYPE15

COURSE TITLE : PYTHON PROGRAMMING LAB

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CLO1:To understand the problem solving approaches

CLO2:To learn the basic programming constructs in Python

CLO3:To practice various computing strategies for Python-based solutions to real world problems

CLO4: To use Python data structures - lists, tuples.

CLO5: To do input/output with files in Python.

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	1	1	2	3	2	1
CLO2	2	1	3	1	-	1	3	2	1
CLO3	3	1	3	1	-	-	3	2	1
CLO4	3	1	3	2	3	-	3	2	1
CLO5	3	1	3	2	3	-	3	2	1

COURSE CODE:23UCSCN26

COURSE TITLE: ADVANCED EXCEL

COURSE OBJECTIVES

- The objective of this course is to help the students learn the advanced features of Excel, to summarise, analyse, explore, and present visualisations of data in the form of charts, graphs

Course Outcomes:

- Handle large amounts of data
- Aggregate numeric data and summarise into categories and subcategories
- Filtering, sorting, and grouping data or subsets of data
- Create pivot tables to consolidate data from multiple files
- Presenting data in the form of charts and graphs

Program: M.Sc. MATHEMATICS

Program Code: 401

SEMESTER – I

COURSE CODE: 23PMATC11

COURSE TITLE : ALGEBRAIC STRUCTURES

Course Outcome

Students will be able to

- CLO 1: Recall basic counting principle, define class equations to solve problems, explain Sylow's theorems and apply the theorem to find number of Sylow subgroups
- CLO 2: Define Solvable groups, define direct products, examine the properties of finite abelian groups, define modules
- CLO 3: Define similar Transformations, define invariant subspace, explore the properties of triangular matrix, to find the index of nilpotence to decompose a space into invariant subspaces, to find invariants of linear transformation, to explore the properties of nilpotent transformation relating nilpotence with invariants.
- CLO 4: Define Jordan, canonical form, Jordan blocks, define rational canonical form, define companion matrix of polynomial, find the elementary devices of transformation, apply the concepts to find characteristic polynomial of linear transformation.
- CLO 5: Define trace, define transpose of a matrix, explain the properties of trace and transpose, to find trace, to find transpose of matrix, to prove Jacobson lemma using the triangular form, define symmetric matrix, skew symmetric matrix, adjoint, to define Hermitian, unitary, normal transformations and to verify whether the transformation in Hermitian, unitary and normal POs PSOs

Outcome Mapping:

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	2	3	3	3	2	1
CLO2	2	1	3	1	3	3	3	2	1
CLO3	3	2	3	1	3	3	3	2	1
CLO4	1	2	3	2	3	3	3	2	1
CLO5	3	1	2	3	3	3	3	2	1

COURSE CODE: 23PMATC12

COURSE TITLE : REAL ANALYSIS I

Course Outcome

Students will be able to

- CLO1: Analyze and evaluate functions of bounded variation and Rectifiable Curves.
- CLO2: Describe the concept of Riemann-Stieltjes integral and its properties.
- CLO3: Demonstrate the concept of step function, upper function, Lebesgue function and their integrals.
- CLO4: Construct various mathematical proofs using the properties of Lebesgue integrals and establish the Levi monotone convergence theorem.
- CLO5: Formulate the concept and properties of inner products, norms and measurable functions.

Outcome Mapping:

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	2	3	3	3	2	1
CLO2	2	1	3	1	3	3	3	2	1
CLO3	3	2	3	1	3	3	3	2	1
CLO4	1	2	3	2	3	3	3	2	1
CLO5	3	1	2	3	3	3	3	2	1

COURSE CODE: 23PMATC13**COURSE TITLE : ORDINARY DIFFERENTIAL EQUATIONS****Course Outcome**

Students will be able to

- CLO1: Establish the qualitative behavior of solutions of systems of differential equations .
- CLO2: Recognize the physical phenomena modeled by differential equations and dynamical systems.
- CLO3: Analyze solutions using appropriate methods and give examples.
- CLO4: Formulate Green's function for boundary value problems.
- CLO5: Understand and use various theoretical ideas and results that underlie the mathematics

Outcome Mapping:

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	2	3	3	3	2	1
CLO2	2	1	3	1	3	3	3	2	1
CLO3	3	2	3	1	3	3	3	2	1
CLO4	1	2	3	2	3	3	3	2	1
CLO5	3	1	2	3	3	3	3	2	1

COURSE CODE: 23PMATE14-1

COURSE TITLE : GRAPH THEORY AND APPLICATIONS

Course Outcome

Students will be able to

- CLO 1: Understand the basics of graph theory and their various properties.
- CLO 2: Develop Models using graphs and to solve the problems algorithmically.
- CLO 3: Apply graph theory concepts to solve real world applications like routing, TSP/traffic control, etc.
- CLO 4: Analyse the significance of graph theory in different engineering disciplines.
- CLO 5: Understand the applications of duality and planarity of graphs.

Outcome Mapping:

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	2	3	3	3	2	1
CLO2	2	1	3	1	3	3	3	2	1
CLO3	3	2	3	1	3	3	3	2	1
CLO4	1	2	3	2	3	3	3	2	1
CLO5	3	1	2	3	3	3	3	2	1

COURSE CODE: 23PMATE14-3

COURSE TITLE : OPTIMIZATION TECHNIQUES

Course Outcome

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

- CO1: Ability to apply the theory of optimization methods and algorithms to develop and for solving various types of optimization problems.
- CO2: Ability to go in research by applying optimization techniques in real value problems

- CO3: Analyze decision making under certainty and uncertainty by game theory

Outcome Mapping:

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	2	3	3	3	2	1
CLO2	2	1	3	1	3	3	3	2	1
CLO3	3	2	3	1	3	3	3	2	1
CLO4	1	2	3	2	3	3	3	2	1
CLO5	3	1	2	3	3	3	3	2	1

SEMESTER - II

COURSE CODE: 23PMATC21

COURSE TITLE : ADVANCED ALGEBRA

Course Outcome

Students will be able to

- CLO1: Prove theorems applying algebraic ways of thinking.
- CLO2: Connect groups with graphs and understanding about Hamiltonian graphs.
- CLO3: Compose clear and accurate proofs using the concepts of Galois Theory.
- CLO4: Bring out insight into Abstract Algebra with focus on axiomatic theories.
- CLO5: Demonstrate knowledge and understanding of fundamental concepts including extension fields, Algebraic extensions, Finite fields, Class equations and Sylow's theorem.

Outcome Mapping:

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	2	3	3	3	2	1
CLO2	2	1	3	1	3	3	3	2	1
CLO3	3	2	3	1	3	3	3	2	1
CLO4	1	2	3	2	3	3	3	2	1
CLO5	3	1	2	3	3	3	3	2	1

COURSE CODE: 23PMATC22**COURSE TITLE : REAL ANALYSIS II****Course Outcome**

Students will be able to

- **CLO1:** Understand and describe the basic concepts of Fourier series and Fourier integrals with respect to orthogonal system.
- **CLO2:** Analyze the representation and convergence problems of Fourier series.
- **CLO3:** Analyze and evaluate the difference between transforms of various functions.
- **CLO4:** Formulate and evaluate complex contour integrals directly and by the fundamental theorem.
- **CLO5:** Apply the Cauchy integral theorem in its various versions to compute contour integration.

Outcome Mapping:

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	2	3	3	3	2	1
CLO2	2	1	3	1	3	3	3	2	1
CLO3	3	2	3	1	3	3	3	2	1
CLO4	1	2	3	2	3	3	3	2	1
CLO5	3	1	2	3	3	3	3	2	1

COURSE CODE: 23PMATC23

COURSE TITLE : PARTIAL DIFFERENTIAL EQUATIONS

Course Outcome

Students will be able to

- CLO1: To understand and classify second order equations and find general solutions
- CLO2: To analyse and solve wave equations in different polar coordinates
- CLO3: To solve Vibrating string problem, Heat conduction problem, to identify and solve Laplace and beam equations
- CLO4: To apply maximum and minimum principle's and solve Dirichlet, Neumann problems for various boundary conditions
- CLO5: To apply Green's function and solve Dirichlet, Laplace problems, to apply Helmholtz operation and to solve Higher dimensional problem.

.Outcome Mapping:

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	2	3	3	3	2	1
CLO2	2	1	3	1	3	3	3	2	1
CLO3	3	2	3	1	3	3	3	2	1
CLO4	1	2	3	2	3	3	3	2	1
CLO5	3	1	2	3	3	3	3	2	1

COURSE CODE: 23PMATE24-1

COURSE TITLE :MATHEMATICAL STATISTICS

Course Outcome

After completion of this course the student will be able to

- **CLO 1:** Apply the concepts of random variables in real life situations.
- **CLO 2:** Identify the type of statistical situation to which different distributions can be applied.
- **CLO 3:** Calculate moments and their functions.
- **CLO 4:** Explore knowledge in the various significance tests for statistical data.
- **CLO 5:** Analyze statistical data using ANOVA.

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	2	3	3	3	2	1
CLO2	2	1	3	1	3	3	3	2	1
CLO3	3	2	3	1	3	3	3	2	1
CLO4	1	2	3	2	3	3	3	2	1
CLO5	3	1	2	3	3	3	3	2	1

COURSE CODE: 23PMATS26

COURSE TITLE :MATHEMATICAL DOCUMENTATION USING LATEX

Course Outcome

Students will be able to

- CLO1 - Understand the basic LaTeX document and the e-contents.
- CLO2 - Construct the structures of contents, index, glossary and text.
- CLO3 - Create the type setting equations
- CLO4 - Discuss several types of boxes and floats.
- CLO5 - Prepare the basic documentation.

Outcome Mapping:

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	2	3	3	3	2	1
CLO2	2	1	3	1	3	3	3	2	1
CLO3	3	2	3	1	3	3	3	2	1
CLO4	1	2	3	2	3	3	3	2	1
CLO5	3	1	2	3	3	3	3	2	1

COURSE CODE: 23PMATE25-3

COURSE TITLE : CALCULUS OF VARIATIONS AND INTEGRAL EQUATIONS

Course Outcome

Students will be able to

- CLO1 -Students know the concept and properties of variational problems with fixed

and moving boundaries, functions of dependent and independent variables and also solve some applications problems in mechanics.

- CLO2 - Able to solve differential equations and integral equation problems.
Find the

solution of eigen value, eigen functions.

- CLO3 -Implementation of various methods to solve Fredholm Intergral equation.
- CLO4 -Students gain acquire knowledge about Hilbert – Schmidt Theory
- CLO5 -Deriving the complex Hilbert space – Orthogonal system of function and Solutions of Fredholm of Integral equation of first kind

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	2	3	3	3	2	1
CLO2	2	1	3	1	3	3	3	2	1
CLO3	3	2	3	1	3	3	3	2	1
CLO4	1	2	3	2	3	3	3	2	1
CLO5	3	1	2	3	3	3	3	2	1

Krishnasamy College of Science, Arts and Management For Women, Cuddalore

Department of Mathematics

COURSE OUTCOMES WITH MAPPING

2022-2023

Program: B.Sc. MATHEMATICS

Program Code: 201

Semester I

COURSE CODE :22UMATC13

COURSE TITLE : CLASSICAL ALGEBRA

COURSE OUTCOMES

On successful completion of the course ,the student will be able to:

- 1) Apply the fundamental concept of theory of equations and to find solutions.
- 2) Apply Descarte's rule, Horner's method, Newton Raphson methods for finding approximate solutions.
- 3) Apply summation of series using Binomial, Exponential and Logarithmic series for finding approximations.
- 4) Apply the elementary number theory for highest power of prime number.
- 5) Apply the elementary number theory for Fermat's and Wilson's theorem.

OUTCOME MAPPING

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2
CO2	3	3	3	3	2
CO3	3	3	3	3	2
CO4	3	3	2	3	2
CO5	3	3	2	3	2

1-Low 2-Moderate 3- High

COURSE CODE :22UMATC14

COURSE TITLE: DIFFERENTIAL CALCULUS AND TRIGONOMETRY

COURSE OUTCOMES

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

- 1) To know the basic concepts of Successive approximations and Leibnitz's theorem
- 2) Know the principles of Maxima and Minima for 2 variables.
- 3) Find the radius of curvature for Cartesian and Polar coordinates, Evolutes and Involutives.
- 4) Know the expansions of Trigonometric functions.
- 5) Understand the concepts of Hyperbolic and Inverse Hyperbolic functions, Logarithm of Complex numbers, summation of Trigonometry series, Gregory series.

OUTCOME MAPPING

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2
CO2	2	3	3	3	2
CO3	3	3	2	3	2
CO4	3	3	3	3	2
CO5	3	2	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE :22UPHYA01

COURSE TITLE :PHYSICS – I

COURSE OUTCOMES

Students studying this course would understand the following:

1. Fundamentals of elasticity, theory of bending, flow of liquids and viscous forces and surface tension
2. Centre of gravity of bodies of different shapes, equilibrium of states and forces involved in stability of floating.
3. Transmission of heat by the process of conduction, convection, and radiation.
4. Various laws involved in heat transformation, thermodynamics, and the concept of entropy
5. The phenomena like interference diffraction, and polarization, optical activity of liquids and its uses.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3
CO2	3	3	3	2	3
CO3	3	3	2	2	2
CO4	2	2	3	3	2
CO5	3	3	2	2	3

CORRELATION LEVELS: 1- LOW, 2- MODERATE, 3- HIGH

COURSE CODE:22UENVS 18

COURSE TITLE: ENVIRONMENTAL STUDIES

Course Objectives

1. To gain knowledge about the importance of environmental sciences and natural resources.
2. To learn the concept, structure and function of ecosystem and the importance of biodiversity.
3. To understand and gain knowledge about environmental pollution and management.
4. To impart knowledge about social issues and human population.
5. To acquire the skills for identifying and solving pollution problem.

Course Outcomes

After completion of this course, students will be able to gain knowledge in

1. The scope and importance of environmental science and natural resources.
2. The structure and functions of Ecosystem and biodiversity and its conservation.
3. The problem of environmental pollution and its management.
4. The social issues and human population.
5. They will identify and solve the pollution problem.

SEMESTER II

COURSE CODE:22UMATC23

COURSE TITLE: INTEGRAL CALCULUS

COURSE OUTCOMES

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

- 1) Solve problems using the different methods of integration.
- 2) Solve problems in techniques of Reduction formulae and Bernoulli's formula.
- 3) Solve problems in Change of order of integration and Properties of definite integrals.
- 4) Solve problems in double and triple integrals.
- 5) Apply double and triple integrals in finding area and volume.

OUTCOME MAPPING

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2
CO2	3	3	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	2	2
CO5	3	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE:22UMATC24

COURSE TITLE : ANALYTICAL GEOMETRY 3D

COURSE OUTCOMES

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

- 1) Explain fundamental concepts of analytical geometry in 3D, about direction cosines of a line and the plane, equation and plane.
- 2) Know the straight line, symmetric form of equation of a line, equation of a line passing through two given points, the plane and the straight line, intersection of three planes.
- 3) Understand the Length of perpendicular distance, Coplanar lines.
- 4) Solve problems on Symmetrical form of the equations of a line, Shortest distance between two given lines, Centre and radius of Sphere

5) Find the equation of Sphere, the length of the tangent form of point to sphere, equation of a circle on a sphere, intersection of two spheres, cone, cylinder and central quadrics.

OUTCOME MAPPING

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2
CO2	3	3	3	2	2
CO3	3	3	3	3	2
CO4	2	3	3	3	2
CO5	3	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE:22UPHYA02

COURSE TITLE: PHYSICS II

COURSE OUTCOMES

Students studying Allied Physics-II would have learnt the following:

1. Electric intensity, potential and capacitor principle and its types.
2. Laws used in electrical circuits, specific resistance measurement and laws of electro magnetic induction.
3. Various atom models, nuclear models, fission and fusion reactions.
4. Solid state electronic devices diode and transistor, their characteristics and applications.
5. the number systems, conversion between them and logic gates and digital circuits.

OUTCOME MAPPING

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2
CO2	3	3	3	2	2
CO3	3	3	3	3	2
CO4	2	3	3	3	2
CO5	3	3	3	3	2

6. 1-Low 2-Moderate 3- High

COURSE CODE:22UPHYP02

COURSE TITLE: PHYSICS PRACTICAL

COURSE OUTCOMES

After Completion of the Allied Physics Practical course the student would be conversant in measuring the

- 1) elastic properties
- 2) surface tension
- 3) Viscous
- 4) Thermal
- 5) electrical
- 6) optical properties and
- 7) Acquired knowledge of semiconductor diodes and digital gates.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2
CO2	3	3	3	2	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	3	2	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE:22UMATE26-2

COURSE TITLE: MATRIX THEORY

COURSE OUTCOMES

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

- 1) Find the rank and inverse of a matrix.
- 2) To understand the symmetric, skew symmetric, Hermitian , orthogonal and Unitary matrices
- 3) Find Eigen Values and Eigen Vectors.
- 4) Diagonalize the matrix using similarity transformation.
- 5) Find the nature of Quadratic forms.

OUTCOME MAPPING

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	3	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE : 22UVALE27

COURSE TITLE : VALUE EDUCATION

Course Objectives

1. To incorporate human values in educational system.
2. To imbibe deeper understanding of the need and importance of value-based living.
3. To develop an honorable character
4. To make the students understand how values lead to success.
5. To make the student realize that all the problems can be solved by one's innate goodness

Course Outcomes

1. The students understand the importance of value-based living.
2. Students become aware of the Universal Value System.
3. Students learn how success is directly value based
4. Students develop an honorable character.
5. Students learn to face all the problems courageously.

COURSE CODE : 22USOFS28

COURSE TITLE: SOFT SKILLS

Course Objectives:

1. To develop the receptive skills of listening and reading.
2. To improve the skills of interpreting and transcoding information.
3. To develop the presentation skills of speaking and writing.
4. To improve communication skills with reference to Personal and interpersonal Interaction.
5. To enhance the personality traits with regard to employability.

Course Outcomes:

1. The students understand the receptive skills of listening and reading.
2. Students learn how to interpret and transcode information.
3. Students learn Personal and Interpersonal Skills of Speaking.
4. Students learn to write without mistakes.
5. Students become aware of the effect of Good Personality Traits.

SEMESTER III

COURSE CODE : 22UMATC33

COURSE TITLE: ABSTRACT ALGEBRA.

Course Outcomes:

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

CO1: Explain the fundamental concepts of algebra such as groups, subgroups, quotient groups.

CO2: Understand the concept of Homomorphism, Automorphisms.

CO3: Solve problems on ideals, Cayley's theorem and permutation groups.

CO4: Demonstrate accurate and efficient use of a ring with examples, some classes of a ring, homomorphism of a ring, ideals, quotient rings and integral domain.

CO5: Solve problems in the above related topics, Normal subgroups, Quotient groups, Homomorphisms, Ideals and Integral domain.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	2
CO2	2	3	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	2	2
CO5	3	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE : 22UMATA03

COURSE TITLE: MATHEMATICAL STATISTICS-I

Course Outcomes:

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

CO1: Understand the concepts of Probability theory and their usage in real world Situations .

CO2: Solve problems on Random variables, Distribution functions and Mathematical expectations.

CO3: Understand the Generating functions and its applications.

CO4: Apply the standard distributions in many field of Science , Engineering ,Medicine ,Nano technology and Business.

CO5:Solve problems in Correlation and Regression Analysis.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	2
CO2	3	3	3	3	2
CO3	3	3	2	2	2
CO4	3	3	3	3	2
CO5	3	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE : 22UMATE36-2

COURSE TITLE: PROGRAMMING IN C LANGUAGE

Course Outcomes:

At the end of the Course the students should be able to exhibit

CO1: Knowledge pertaining to C-Language Fundamentals

CO2: Logic using Control Statements

CO3: Modular Programming using Functions

CO4: Knowledge pertaining to arrays and structures.

CO5: Advanced Programming techniques to solve a very complex problems.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE : 22UMATE36-2

COURSE TITLE: PROGRAMMING IN C LANGUAGE

Course Outcomes:

At the end of the Course the students should be able to exhibit

CO1: Knowledge pertaining to C-Language Fundamentals

CO2: Logic using Control Statements

CO3: Modular Programming using Functions

CO4: Knowledge pertaining to arrays and structures.

CO5: Advanced Programming techniques to solve a very complex problems.

COURSE CODE : 22UMATE36-2

COURSE TITLE: PROGRAMMING IN C LANGUAGE

Course Outcomes:

At the end of the Course the students should be able to exhibit

CO1: Knowledge pertaining to C-Language Fundamentals

CO2: Logic using Control Statements

CO3: Modular Programming using Functions

CO4: Knowledge pertaining to arrays and structures.

CO5: Advanced Programming techniques to solve a very complex problems.

COURSE CODE : 22UCOMN38

COURSE TITLE: ELEMENTS OF ACCOUNTING

Course Outcomes

On Successful completion of the course, student will be able

1. To gain knowledge on accounting basics
2. To gain knowledge on journal and trial balance
3. To acquire knowledge on subsidiary books
4. To acquire knowledge on finding out errors
5. To finalize final accounts

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	2	2
CO2	2	2	2	2	2
CO3	2	2	2	2	2
CO4	2	2	2	2	2
CO5	2	2	2	2	2

PO – Programme Outcome, CO – Course outcome

1 – Low, 2.– Moderate, 3 – High

SEMESTER-IV

COURSE CODE :22UMATC43

COURSE TITLE: REAL ANALYSIS – I

Course Outcomes:

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

CO1: Understand examples and counter examples in Functions and Sequences

CO2: Know Proof techniques.

CO3: Improve Problem solving skills in Analysis.

CO4: Understand the concepts of Convergence sequence.

CO5 : Solve problems on Metric spaces and Continuous functions.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE:22UMATC44

COURSE TITLE: STATICS

Course Outcomes:

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

CO1: Apply the fundamental concept of statics to

a. Demonstrate the application of vectors for the analysis of static equilibrium ;

b. Analyze static equilibrium to particles and rigid bodies and apply the principles of equilibrium for analyzing beams.

CO2: Understand problem solving techniques on Parallel forces and Moments.

CO3: Solve problems on Equilibrium of three forces acting on a rigid body.

CO4: Solve equations involving frictional, statistical, dynamical and limiting frictions.

CO5: Illustrate the mathematical aspects that provide the skills and problem solving in forces acting at a point, coplanar forces and equilibrium of strings and chains.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE: 22UMATA04

COURSE TITLE : MATHEMATICAL STATISTICS-II

Course Outcomes:

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

CO1: Gain working knowledge related to the problems of theoretical statistics.

CO2: Apply the fundamental concept of statistical methods to solve some real life problems.

CO3: Gain a basic knowledge for study of advanced courses in this area.

CO4: Solve problems on Testing of Hypothesis.

CO5: Apply the Analysis of Variance and Design of Experiments over the collection of data for Research problems.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE:22UCOMN48

COURSE TITLE: PRINCIPLES OF COMMERCE

Course Outcomes

On Successful completion of the course, student will be able to

1. Acquire knowledge on basics of commerce
2. Find out the different types of organization
3. Acquire knowledge on the functions of marketing
4. To find out the type of banks
5. Acquire knowledge on working of stock exchange

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	2	2
CO2	2	2	2	2	2
CO3	2	2	2	2	2
CO4	2	2	2	2	2
CO5	2	2	2	2	2

PO – Programme Outcome, CO – Course outcome

1 – Low, 2.– Moderate, 3 – High

COURSE CODE:22UMATS48

COURSE TITLE: QUANTITATIVE APTITUDE II

COURSE OUTCOMES:

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

CO1: Understand the concept of ratio and proportion.

CO2: Know the shortcuts and tricks involved in solving time and distance problems.

CO3: Learn how to solve the tricky questions based on time and work.

CO4: Gain knowledge in order to answer problems based on trains.

CO5: Apply the concept of relative speed related to boats and streams.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

SEMESTER-V

COURSE CODE: 22UMATC51

COURSE TITLE:LINEAR ALGEBRA

Course Outcomes:

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

CO1: Explain the fundamental concepts of Algebraic structures of Vector Spaces and Linear Transformation.

CO2: Understand the concepts of Dual Space- Inner Product Spaces.

CO3: Solve problems on Linear dependence and independence.

CO4: Understand the concepts of Linear transformation on Matrices, Canonical forms, Triangular forms.

CO5: Solve problems on trace of Matrix, Transpose and Determinants

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE:22UMATC52

COURSE TITLE: REAL ANALYSIS – II.

Course Outcomes:

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

CO1: Describe fundamental properties of metric spaces that lead to the development of Compact metric spaces.

CO2: Demonstrate an understanding of a set of measure zero and how that are used in Riemann integral.

CO3: Understand the Rolle’s theorem,Fundamental theorem of calculus and Taylor’s theorem

CO4: Understand the point-wise convergence and uniform convergence of a sequence of functions and series of functions.

CO5: Solve problems on complete and compact Metric spaces, Riemann Integration, sequences and series of functions.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE:22UMATC53

COURSE TITLE: DYNAMICS

Course Outcomes:

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

CO1: Apply the fundamental concept of dynamics to

- (a) Demonstrate their understanding of the principles of kinematics and kinetics of particles and planar rigid bodies.

(b) Analyze planar rigid body kinematics and kinetics.

CO2: Solve equations of projectiles, moment of inertia and simple harmonic motions.

CO3: Illustrate the mathematical aspects that provide the skills and problem techniques in kinematics of point and Newton's laws of motion.

CO4: Solve problems on work done power energy, Work done in stretching an elastic string, Power, Energy, Kinetic Energy.

CO5: Understand the Principle of work-Energy, Potential Energy, The Principle of conservation of energy.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE:22UMATC54

COURSE TITLE:DIFFERENTIAL EQUATIONS

Course Outcomes:

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

CO1: Explain the fundamental concepts of ordinary differential equations and their role in modern mathematics.

CO2: Use ordinary differential equations to model simple electric circuits, population growth and mass-spring systems, as well as other applications.

CO3: Demonstrate accurate and efficient use of the Laplace transforms and their applications in the solution of ordinary differential equations.

CO4: Apply problem-solving using concepts and techniques from ordinary differential equations and Laplace transforms relevant to diverse situations

in physics, engineering, financial mathematics and in other mathematical
Contexts

CO5: Apply the differential equations in geometrical and physical problems arise in real
life situations

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE:22UMATE58-1

COURSE TITLE: DISCRETE MATHEMATICS

Course Outcomes:

Students will be introduced to have knowledge of many mathematical concepts in

CO1: Examples and counter examples for different types Logical Statements.

CO2: Proof techniques.

CO3: Problem solving techniques studied in Discrete Mathematics such as Logic, Relations,
Functions, Some Algebraic Structure.

CO4: Equivalence relations ,Composition of functions and inverse functions.

CO5: Lattices as Partially Ordered Sets,Properties of Lattices,Lattices as Algebraic, Special
Lattices and Boolean Algebra.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE :22UMATS59

COURSE TITLE :QUANTITATIVE APTITUDE- III

Course Outcomes:

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

CO1: Compute simple interest.

CO2: Solve Problems on compound interest.

CO3: Understand logarithms.

CO3: Calculate area of certain space.

CO5: Find surface area and volume for the real world problems.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

SEMESTER-VI

COURSE CODE:22UMATC61

COURSE TITLE: VECTOR ANALYSIS

Course Outcomes:

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

- CO1:** Explain the fundamental concepts of vectors, direction cosines, direction ratios and work out scalar and vector products of two and three vector.
- CO2:** Understand the concepts of Solenoidal and Irrotational vectors.
- CO3:** Differentiate vector functions of a single variable, find the gradient, divergence and curl and prove identities involving them.
- CO4:** Integrate vectors, compute line, surface and volume integrals in a vector field.
- CO5:** Do the verification of Gauss divergence theorem, Stoke's and Green's theorem.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE:22UMATC62

COURSE TITLE:COMPLEX ANALYSIS

Course Outcomes:

Students will be introduced to have knowledge of many mathematical concepts in

CO1: Examples and counter examples in Limits, Functions of Complex variables and Continuous functions

CO2: Proof techniques in Complex Analysis.

CO3: Problem solving skills in Analytic functions and Elementary Transformation..

CO4: Problem solving skills in Harmonic functions, Complex integration, definite Integral, Cauchy's Theorem, Cauchy's integral formula.

CO5: Computations of Singularities, Residues and zeros of Analytic functions.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE: 22UMATC63

COURSE TITLE:OPERATIONS RESEARCH

Course Outcomes:

After completion of the course, students will be able to

CO1 : Understand the various techniques to solve Linear Programming Problems.

CO2 : Apply the Transportation and Assignment problem concepts in real life problems.

CO3: Solve the Network problems by using PERT & CPM Methods.

CO4 : Deal industrial models and also prerequisite for studying advanced courses in Nonlinear Programming Problems, Inventory Control Problem and Queuing Theory.

CO5: Acquire the knowledge to write TNPSC Statistical, UG TRB, Polytechnic TRB exams.

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

COURSE CODE:22UMATC64

COURSE TITLE:GRAPH THEORY

Course Outcomes:

After completion of the course, students will be able to

CO1: Give Examples and counter examples of Graphs and Subgraphs

CO2: Understand Proof techniques in Graph theory.

CO3: Know the Intersection Graphs and Line Graphs, Incident Matrices, Intersection Graphs and Line Graphs, Operations on Graphs.

CO4: Get Problem solving skills in Chromatic Number and Chromatic Index.

CO5: Understand the concepts of Hamiltonian Graphs, Trees, Planarity and Colouring

Outcome Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	3	2	3	3	2
CO3	3	3	3	3	2
CO4	3	3	3	3	2
CO5	2	3	3	3	2

1-Low 2-Moderate 3- High

M.Sc. MATHEMATICS

SEMESTER: I

COURSE CODE : 22PMATC11

COURSE TITLE : ADVANCED ABSTRACT ALGEBRA

COURSE OUTCOMES

At the end of the course, the student will be able

- To find the number of Sylow sub groups.
- To find the number of non-Isomorphic Abelian groups.
- To understand fields and roots of polynomials.
- To find the splitting field, Galois group of the given polynomial.
- To check whether the given polynomial is solvable by radicals or not.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	3	3	2
CO3	2	3	3	3	3
CO4	3	2	3	3	3
CO5	2	3	3	3	2

COURSE CODE : 22PMATC12

COURSE TITLE : ADVANCED REAL ANALYSIS

COURSE OUTCOMES

Our successful completion of this course, students will be able to

- Demonstrate an understanding the theory of function of bounded variations, sequence Of functions, Riemann-stieltjes integrals.
- To apply the theory in the course to solve a variety of problems at an appropriate Level of difficulty.
- Demonstrate skills in constructing rigorous mathematical analysis.
- The student will gain confidence in proving theorems and solving problems.

- Student will understand the generalized concept of Differential Calculus.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	2	3	2
CO3	3	2	3	3	3
CO4	3	3	3	3	3
CO5	2	3	3	3	3

COURSE CODE : 22PMATC13

COURSE TITLE : ORDINARY DIFFERENTIAL EQUATIONS

COURSE OUTCOMES

After successful completion of the course the student will be able to:

- Understand the concept of Wronskian formula.
- Understand the concept of initial value problems.
- Understand the concept of Existence and uniqueness theorems.
- Understand the Bessel Function.
- Understand the Lipschitz condition.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	2	3	2
CO3	2	2	3	3	3
CO4	3	3	3	2	3
CO5	2	3	3	3	2

COURSE CODE :22PMATC14

COURSE TITLE : OPTIMIZATION TECHNIQUES

COURSE OUTCOMES

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

- Ability to apply the theory of optimization methods and algorithms to develop and For solving various types of optimization problems.
- Ability to go in research by applying optimization techniques in real value problems
- Analyze decision making under certainty and uncertainty by game theory.
- Understand unconstrained and constrained optimization problems.
- Understand Non-Linear programming problems.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	3	3	2
CO3	2	3	3	3	3
CO4	3	2	3	3	3
CO5	2	3	3	3	2

COURSE CODE :22PMATE15-2

COURSE TITLE : MATHEMATICAL STATISTICS

COURSE OUTCOMES

After completion of this course the student will be able to

- Apply the concepts of random variables in real life situations.
- Identify the type of statistical situation to which different distributions can be applied

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	2	3	3
CO3	2	2	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	2

COURSE CODE : 22PCSCO17-1

COURSE TITLE : FUNDAMENTALS OF COMPUTER APPLICATION.

COURSE OUTCOMES

- Students are able to know about computer and basic applications of computer.
- Students are able to get knowledge about operating system.
- Students are able to aim at imparting a basic level appreciation Programme.
- Students can able to make spread sheets and its styles.
- Students get knowledge about Power point presentation.

OUTCOME MAPPING

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	3	1
CO2	2	3	3	1	2
CO3	2	2	3	2	2
CO4	2	2	3	2	2
CO5	2	2	1	3	1

SEMESTER: II

COURSE CODE :22PMATC21

COURSE TITLE : ADVANCED LINEAR ALGEBRA

COURSE OUTCOMES

Students will be introduced to and have the knowledge of many mathematical concepts, Examples and Counter Examples, Proof Techniques and Problem Solving studied in Linear Algebra such as

- Systems of linear equations
- The algebra of linear Equations
- The algebra of Polynomials
- Determinant functions
- Diagonalization, Decompositions.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3

CO2	3	3	2	3	2
CO3	3	2	3	3	3
CO4	3	3	3	3	3
CO5	2	3	3	3	3

COURSE CODE :22PMATC22

COURSE TITLE : MEASURE THEORY AND INTEGRATION

COURSE OUTCOMES

Students will be able to get knowledge of many mathematical concepts

- Examples and counter examples
- Problem solving techniques
- Understand the fundamental studies in measurable sets, measurable functions and convergence in measure.
- Student will understand the generalized concept of convergence in measure.
- Student will understand the measurability in a product space.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	2	3	2
CO3	2	2	3	3	3
CO4	3	3	3	2	3
CO5	2	3	3	3	3

COURSE CODE :22PMATC23

COURSE TITLE : PARTIAL DIFFERENTIAL EQUATIONS

COURSE OUTCOMES

On successful completion of the course, the student will be able to:

- Solve various types of first order PDE.
- Solve various types of second order PDE.
- Solve Elliptic differential equation.
- Solve Parabolic differential equation.
- Solve Hyperbolic differential equation

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	3	3	2

CO3	2	3	3	3	3
CO4	3	2	3	3	3
CO5	2	3	3	3	2

COURSE CODE :22PMATC24

COURSE TITLE : CLASSICAL DYNAMICS

COURSE OUTCOMES

- Be able to solve the Lagrange's equations for simple configurations using various methods
- Be able to understand the concept of Hamilton Jacobi Theory.
- Be able to understand the concept canonical Transformations
- To develop skills in formulating and solving physics problems
- Able to get idea of dynamical systems are of relatively recent origin, the concept of motion in phase- space and its geometrical depiction is simple

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	2	3	2
CO3	3	2	3	3	3
CO4	3	3	3	3	3
CO5	2	3	3	3	3

COURSE CODE :22PMATE25-1

COURSE TITLE : NUMBER THEORY AND CRYPTOGRAPHY

COURSE OUTCOMES

- Students able to understand the divisibility and Euclidean algorithm.
- Students able to understand quadratics residues and reciprocity.
- Students able to analyse encryption and decryption.
- Students able to do the primality test.
- Students able to the determine the elliptic curve primality test.\

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
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CO1	3	3	3	2	3
CO2	3	3	2	3	2
CO3	2	2	3	3	3
CO4	3	3	3	2	3
CO5	2	3	3	3	2

COURSE CODE : 2PHUMR27

COURSE TITLE: HUMAN RIGHTS

COURSE OUTCOMES :

At the end of the course, the student

- will have knowledge about the conceptual background of Human Rights.
- can apprise on International Human Rights norms and mechanisms.
- can understand the emerging dimensions of Human Rights in international forum.
- can explain about the Third Generation Human Rights
- can discuss about Right to Clean Environment.

OUT COME MAPPING

CO/PO	PO				
	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	3	2
CO2	1	2	2	3	3
CO3	2	2	3	2	2
CO4	2	3	3	2	3
CO5	2	2	2	3	3

SEMESTER III

COURSE CODE: 22PMATC31

COURSE TITLE:ADVANCED COMPLEX ANALYSIS

COURSE OUTCOMES

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

- To learn the concepts of Complex Integration.
- Compute the Taylor's theorem, to determine the nature of the removable Singularities, zeros and poles.
- Explain the convergence of power series and develop analytical capabilities in Taylor or Laurent series in a given domain;
- Determine the concept of conformal mapping of polygons, to find Schwarz –Christoffel formula.
- With this course students are prepared to learn about advance complex Analysis.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	2	3	2
CO3	2	2	3	3	3
CO4	3	3	3	2	3
CO5	2	3	3	3	2

COURSE CODE: 22PMATC32

COURSE TITLE : TOPOLOGY

COURSE OUTCOMES

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

- Define and illustrate the concept of topological spaces and continuous functions.
- Prove a selection of theorems concerning topological space, continuous functions, product topologies, and quotient topologies.
- Define and illustrate the concept of product of topologies and illustrate the concepts of the separation axioms.
- Define connectedness and compactness, and prove a selection of related theorems, and describe different examples distinguishing general, geometric, and algebraic topology.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	2	3	3
CO3	2	2	3	3	3
CO4	3	3	3	2	3
CO5	2	3	3	3	2

COURSE CODE: 22PMATC33

COURSE TITLE : RESEARCH METHODOLOGY

COURSE OUTCOMES

- To understand meaning of Research and objectives of Research.
- To understand various stages of preparing publishing a research articles and ethical issues.
- To understand the fundamental of logical reasoning in pure mathematics and modelling aspects of applied mathematics.
- To understand Different technique of interpretation.
- To understand Holomorphic functions and the calculus of residues.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	3	3	2
CO3	2	3	3	3	3
CO4	3	2	3	3	3
CO5	3	3	3	3	3

COURSE CODE: 22PMATC34

COURSE TITLE : STOCHASTIC PROCESSES

COURSE OUTCOMES

At the end of the course, the student will be able to

- working knowledge related to the problems of uncertainty.
- a basic knowledge for doing research in this area.
- Classify Poisson, Markov and birth and death process.
- Understand the Markov chains and Markov processes.
- Understand Renewal process.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	2	3	2
CO3	2	2	3	3	3
CO4	3	3	3	2	3
CO5	2	3	3	3	2

COUSE CODE: 22PMATE35-1

COURSE TITLE : DISCRETE MATHEMATICS

COURSE OUTCOMES

After completion of this course the student will be able to

- Understand how Lattices can be used as a tool and mathematical model in the study of networks and circuits.
- Construct mathematical arguments using logical connectives and quantifiers.
- Apply codes to develop Mathematical Models.
- Explore Applications of crypto systems in modern technology.
- Learn how to work with some of the discrete structures which include semi-groups and its applications.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3
CO2	3	3	2	3	2
CO3	2	2	3	3	3
CO4	3	3	3	2	3
CO5	2	3	3	3	2

COURSE CODE: 22PCSCO37-2

COURSE TITLE: MANAGEMENT INFORMATION SYSTEM

COURSE OUTCOMES

- Evaluate the role of information systems in today's competitive business environment
- Interpret information systems in the enterprise.
- Explain relationships between concepts of information systems, organization, management and strategy.
- Debate infrastructure of information technology & illustrate redesigning the organization with information systems.
- Evaluate models for determining the business value of information systems & identify appropriate strategies to manage the system implementation process

OUTCOME MAPPING

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	2	3
CO2	3	3	2	3	2
CO3	2	2	3	3	2
CO4	2	2	2	3	3
CO5	3	2	2	2	2

SEMESTER IV

COURSE CODE:22PMATC41

COURSE TITLE: FUNCTIONAL ANALYSIS

COURSE OUTCOMES

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

- Appreciate how ideas from different areas of mathematics combine to produce new tools that are more powerful than would otherwise be possible.
- Understand how functional analysis underpins modern analysis.
- Develop their mathematical intuition and problem-solving capabilities, especially in predicting the space in which the solution of a partial differential equation belongs to.
- Learn advanced analysis in terms of Sobolev spaces, Besov spaces, Orlicz spaces and other distributional spaces.
- Definition and examples of Banach Algebras – To understand the Regular and simple elements, radical and semi-simplicity

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	2	3	2
CO3	3	2	3	3	3
CO4	3	3	3	3	3
CO5	2	3	3	3	3

COURSE CODE: 22PMATC42

COURSE TITLE: FLUID DYNAMICS

COURSE OUTCOMES

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

- Identify and obtain the values of fluid properties and relationship between them and understand the principles of continuity, momentum, and energy as applied to fluid motions.
- Recognize these principles written in form of mathematical equations.
- Apply dimensional analysis to predict physical parameters that influence the flow in fluid dynamics.
- Understand stress components and rate of strain quadric.
- Understand Viscosity, Laminar flow, Viscous flow.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	3	3	2
CO3	2	3	3	3	3
CO4	3	2	3	3	3
CO5	2	3	3	3	2

COURSE CODE:22PMATC43

COURSE TITLE: GRAPH THEORY

COURSE OUTCOMES

After completion of this course the student will be able to

- Understand the basics of graph theory and their various properties.
- Develop Models using graphs and to solve the problems algorithmically.
- Apply graph theory concepts to solve real world applications like routing, TSP/traffic control, etc.
- Analyse the significance of graph theory in different engineering disciplines.
- Understand the applications of duality and planarity o graphs.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	2	3	2
CO3	3	2	3	3	3
CO4	3	3	3	2	3
CO5	2	3	3	3	2

COURSE CODE: 22PMATE44-3

COURSE TITLE: NUMERICAL METHODS

COURSE OUTCOMES

After completion of this course the student will be able to

- Obtain numerical solution of algebraic and transcendental equation.
- Learn about interpolation with evenly and unevenly spaced points.
- Develop logical skills in Solving numerical differentiation and integration.
- Obtain numerical solution of ordinary differential equations.
- Develop and apply the appropriate Numerical techniques in various Science and Engineering problems, interpret the results and assess accuracy.

OUTCOME MAPPING

PO/CO	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	2	3	3
CO3	2	2	3	3	3
CO4	3	3	3	2	3
CO5	2	3	3	3	2