

# Department of Mathematics Course Outcomes 2022-2023

Sl. No.	Semester	Course Code	Course Title	Course Outcomes(COs)	
1	I	1*01MAT20	<b>DIFERENTIAL EQUATIONS</b>	CO1	1. Solve linear differential equations.
				CO2	2. Convert non exact homogenous equations to exact differential equations by using integrating Factors.
				CO3	3. Know the methods of finding solutions of differential equations of the first order but not of the First degree.
				CO4	4. Solve higher order linear differential equations. Both homogenous and non homogenous with Constant coefficients.
				CO5	5. Understand the concept and apply appropriate methods for solving differential equations.
2	II	2*01MAT20	<b>THREE DIMENSIONAL SOLID GEOMETRY</b>	CO1	1. To get the knowledge of planes. Equations of plane passing through given points
				CO2	2. To learn the basic ideas of equation of lines. To know the condition of given lines are coplanar. Shortest distance between two lines.
				CO3	3. Understand the properties of planes, lines, spheres. Pole of contact, polar plane, pole of a plane.
				CO4	4. To learn the concept of condition of spheres to be orthogonal. Coaxial system of spheres.
				CO5	5. To understand the concept of cone. To express the problems geometrically.
3	III	3*01MAT15	<b>ABSTRACT ALGEBRA</b>	CO1	1. To acquire the basic knowledge and structure of groups, sub groups and cyclic groups.
				CO2	2. To get the significance of the notation of a normal subgroup.
				CO3	3. To study the homomorphisms and isomorphisms with applications.
				CO4	4. To get the behavior of the permutations and operations on them.
				CO5	5. To understand the ring theory, concepts with the help of knowledge in group theory and to prove the theorems. To learn the applications of ring theory in various fields.
4	IV	4*01MAT15-A	<b>REAL ANALYSIS</b>	CO1	1. To get the clear idea about the real numbers and real valued functions.
				CO2	2. Obtain the skills of analyzing the concepts and applying appropriate methods for testing the convergence of a sequence / series.
				CO3	3. To test the continuity and differentiability of a function.
				CO4	4. To know the geometrical interpretation of mean value theorems.
				CO5	5. To understand the concept of Riemann integration of a functions
5	IV	4*01MAT15-B	<b>LINEAR ALGEBRA</b>	CO1	1. To understand the concepts of vector spaces, sub spaces and their properties.
				CO2	2. To get the knowledge of bases and dimensions.
				CO3	3. Understand the concepts of linear transformations and their properties.
				CO4	4. Apply Cayley-Hamilton theorems to problems for finding the inverse of a matrix and higher powers of matrices without using routine methods.
				CO5	5. Learn the properties of inner product spaces and determine orthogonality in inner product spaces.
				CO1	solutions.
				CO2	2. Understand various finite difference concepts and interpolation methods.

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6	V	5*01MAT15-B	Numerical Methods	CO3	3. Workout numerical differentiation and integration whenever and where ever routine methods are not applicable.
				CO4	4. Find numerical solutions of ordinary differential equations by using various numerical methods.
				CO5	5. Analyse and evaluate the accuracy of numerical methods.
7	VI	5*01MAT22-A	Mathematical Special Functions	CO1	1. Understand the beta and gama functions, their properties and relation between these two functions, understand the orthogonal properties of chebyshev polynomials and recurrence relations.
				CO2	2. Find power serires solutions of ordinary differential equations.
				CO3	3. Solve hermite equation and write the hermite polynomial of order n, also find the generatingfunction for hormite polynomials, study the orthogonal properties of hermite polynomials and recurrence relation.
				CO4	4.Solve legendre equations and write the legendre equation of first kind and generating function, understand the orthogonal properties of legendre polynomiials.
				CO5	5. Solve bessel equations and write the bessel equation of first kind of order n and find generating function, understand orthogonal properties of bessel function.
8	VI	5*01MAT22-7	Multiple integrals and application sof vector calculus	CO1	1. Learn multiple integrals as a natural extension of definite integral to a function of two variables in the case of double integral /three variables in case of trible integrals.
				CO2	2. Learn applications in terms of finding surface area by double integral and volume by triple integral.
				CO3	3. Determine the gradient, divergence and curl of a vector and vector identities.
				CO4	4. Evaluate line, surface and volume integrals.
				CO5	5. Understand the relation between surface and volume integrals, relation between line integral and volume integral, relation between line and surface integral.
9	VI	5*01MAT22-7	Integral transform s with application s	CO1	1. Evaluate laplace transforms of certain functions and find derivatives and integrals.
				CO2	2. Determine properties of laplace transform, may be solved by application of special functions namely dirac delta function, error function, bessel function and periodic function.
				CO3	3. Understand properties of inverse laplace transform, find inverse laplace transform of derivatives and integrals.
				CO4	4. Solve ordinary differential equations with constant / variable co effience by using laplace transform method.
				CO5	5. Comprehend the properties of four ier transform and solve problems related to finite four year transforms.
10	VI	5*01MAT22-6	Partial differenti	CO1	1. Classify partial differential equations, formation of partial differential equations and solve
				CO2	2. Solve lagrange's equations by various methods, find integral surface passing through a given curve and surfaces orthogonal to a given system of surfaces.
				CO3	3. Find solution of non linear partial differential equations of order one by using charpits method.
				CO4	4. Find solutions of non linear parital differential equations of order one by using jacobis method

			al equations and fou rier series	CO5	5. Understand fourier series expansion of a functions $f(x)$ and parsevals theorem.
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11	VI	5*01MAT22-7	Number theory	co1	1. Find quotient and remainder from integer division, study divisibility properties of integers and distribution of primes.
				co2	2. Understand dirichlet multiplication which helps to clarify interrelation ship between various arithmetical functions.
				co3	3. Comprehend the behavior of arithmetical functions for large n
				co4	4. Understand the concepts of congruencies, residue classes and complete residue system.
				co5	5. Comprehend the concept of quadratic residues mod p and quadratic non reisdues mod p.