

PROGRAMME OUTCOME (PO):

To impart quality knowledge of mathematics

To create an environment that helps in developing mathematical skills.

To engage students in meaningful mathematical experiences

COURSE OUTCOME

Subject Name	Subject Code	Course outcome
Number Theory-1, Algebra-I and Calculus-I	BSCMTP101	<p>1.Understand the elementary concepts of Number Theory.</p> <p>2. Solve the system of homogeneous and non-homogeneous linear equations in variables.</p> <p>3. Sketch curves in Cartesian and polar co-ordinates.</p> <p>4. Identify and apply intermediate value theorem, mean value theorems and L'Hospital rule.</p>
Number Theory-II, Algebra-II and Calculus-II	BSCMTP201	<p>1.Understand the Euler's ϕ-function and finite continued fractions.</p> <p>2.Recognize the mathematical objects called Groups.</p> <p>3.Identify cyclic and non-cyclic groups</p> <p>4.Link the fundamental concepts of groups and symmetries of geometrical objects. Understand the concept of partial derivatives of functions of several variables.</p> <p>5. Find the Taylor's and Maclaurin's series of functions of two variables.</p> <p>6.Find the extreme values of functions of two variables</p>

		7. Understand the concepts of line integrals, multiple integrals and their applications
Ordinary Differential Equations and Real Analysis – I	BSCMTP301	<p>1 Solve first-order non-linear differential equations and linear differential equations.</p> <p>2 To model problems in nature using Ordinary Differential Equations.</p> <p>3 Formulate differential equations for various mathematical models Apply these techniques to solve and analyze various mathematical models.</p> <p>4 Understand the fundamental properties of the real numbers that lead to define sequence and series, the formal development of real analysis. Learn the concept of Convergence and Divergence of a sequence.</p> <p>5 Able to handle and understand limits and their use in sequences, series, differentiation, and integration.</p> <p>6 Apply the ratio, root, alternating series, and limit comparison tests for convergence and Absolute convergence of an infinite series.</p>
Partial Differential Equations and Integral Transforms	BSCMTP401	<p>1 Solve the Partial Differential Equations of the first order and second order Formulate, classify and transform partial differential equations into canonical form.</p> <p>2 Solve linear and non-linear partial differential equations using various methods; and apply these methods to solving some physical problems.</p>

		<p>3 Able to take more courses on wave equation, heat equation, and Laplace equation.</p> <p>4 Solve PDE by Laplace Transforms and Fourier Transforms</p>
Real Analysis-II and Complex Analysis-II	BSCMTP501	<p>The overall expectation from this course is that the student builds a basic understanding on Riemann integration and elementary complex analysis. The broader course outcomes are listed as follows. At the end of this course, the student will be able to</p> <ol style="list-style-type: none"> 1. Carry out computations of upper and lower Riemann sums as well definite integrals. 2. Describe various criteria for Integrability of functions. 3. Evaluate some improper integrals and Evaluate double integrals by using Beta, Gamma functions. 4. Exhibit certain properties of mathematical objects such as integrable functions, analytic functions, harmonic functions and so on 5. Prove some statements related to Riemann integration as well as in complex analysis 6. Carry out the existing algorithms to construct mathematical structures such as analytic functions 7. Evaluate complex line integrals using definition and some well known theorems. 8. Apply the gained knowledge to solve various other problems.

Algebra and Graph Theory	BSCMTP502	<p>The overall expectation from this course is that the student builds a basic understanding on the theory of groups and some elementary concepts of graph theory This course will enable the students to</p> <ol style="list-style-type: none"> 1. Know the significance of normal subgroups and quotient groups. 2 Understand structure preserving mapping between two algebraic structures of the same type 3. Know the algebraic structures having the same structure with different elements 4 Identify and analyze the algebraic structures such as ring, field and integral domain 5. Know the basic terminologies used in the theory of graphs. 6 Study the graphs which are used to model pair wise relations between the objects which will help in understanding the networking, optimization, matching and operation 7. Understand the importance of sets, connectivity, planarity and colorability in the theory of graphs 8. Apply graph theoretic tools to solve real life problems.
Linear algebra	BSCMTP601	<p>The overall expectation from this course is that the student will build a basic understanding in few areas of linear algebra such as vector spaces, linear transformations and inner product spaces. Some broader course outcomes are listed as follows. At the</p>

		<p>end of this course, the student will be able to</p> <ol style="list-style-type: none"> 1. Understand the concepts of Vector spaces, subspaces, bases dimension and their properties 2. Find a basis and compute the dimension of a given finite dimensional vector space. 3. Use matrix representation of linear transformations in various computations <p>Become familiar with the concepts Eigen values and Eigen vectors, minimal polynomials. linear transformations etc</p> <ol style="list-style-type: none"> 5. Learn properties of inner product spaces and determine orthogonality in inner product spaces 6. Prove various statements in the contest of vectors spaces 7. Realize importance of adjoint of a linear transformation and its canonical form 8. Apply the techniques of diagonalization in solving various problems related to matrices
Numerical analysis	BSCMTP602	<p>The overall expectation from this course is that the student will get equipped with certain numerical techniques for various computations such as finding roots, finding the integrals and derivatives, and finding solutions to differential equations Some broader course outcomes are listed as follows. At the end of this course, the student will be able to</p> <ol style="list-style-type: none"> 1 Compute approximate roots of algebraic and transcendental equations using iterations 2. Describe various operators arising

		<p>numerical analysis such as difference operators, shift operators and so on</p> <p>3. Articulate the rationale behind various techniques of numerical analysis such as in finding roots, integrals and derivatives.</p> <p>4 Reproduce the existing algorithms for various tasks as mentioned previously in numerical analysis.</p> <p>5 Apply the rules of calculus and other areas of mathematics in justifying the techniques of numerical analysis</p> <p>6. Solve problem using suitable numerical technique</p> <p>7. Obtain approximate solutions to initial value problems using various numerical techniques</p> <p>8 Appreciate the profound applicability of techniques of numerical analysis in solving real life problems and also appreciate the way the techniques are modified improve the accuracy</p>
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