

PG Programme : Mathematics

OUTCOME

By studying MSc mathematics successful students will

- Get advanced knowledge of different areas of Mathematics
- Innovate, invent and solve complex mathematical problems using the knowledge of pure and applied mathematics.
- Be able to give exact interpretation to his ideas and conclusions.
- Work effectively as an individual and also as a member or leader in multi-linguistic and multi-disciplinary teams

Semester	Paper code	Paper	Outcome
1	PG1MATC01	Linear Algebra	<ul style="list-style-type: none"> • Acquire deep knowledge about vectorspace linear transformation, eigen value and eigen space etc. • Able to solve applied problem related eigen values, eigen vectors, simultaneous triangulation and simultaneous diagonalization.
	PG1MATC02	Metric space	<ol style="list-style-type: none"> 1. Understand Metric space , open sphere , open set, closed set. 2. Study convergence, complete metric space. 3. Know continuous mapping, Cauchy and Minkowski's inequalities. 4. Study topological spaces, base, compactness.
	PG1MATC03	Real Analysis	<ul style="list-style-type: none"> • Understand uniform convergence and continuity • Apply Riemann –Stieltjes integral to vector valued functions • Get the idea of bounded variation and rectifiable curve
	PG1MATC04	Graph Theory	<ul style="list-style-type: none"> • Analyse different types of graphs • Apply the theorems in real life problems viz. Travelling salesman problem, Shortest path problem • Get the idea of coloring of graph
	PG1MATC05	Complex Analysis	<ol style="list-style-type: none"> 1. Study analytic functions and Mobius trnsformations. 2. Study power series representation of analytic functions, Cauchy's integral formula, Cauchy's theorem. 3. Know about different types of singularities, residues and Rouche's theorem. 4. Study Maximum Principle and Schwarz's lemma.



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2	PG1MATC06	Abstract Algebra	<ul style="list-style-type: none"> Identify the concept of Normal groups and Quotient groups. Provide information on ideals, integral domain etc. Explain Sylow theorem and its applications
	PG1MATC07	Topology I	<p>After completing this course, the student will be able to :</p> <ol style="list-style-type: none"> Know about Topological spaces, examples, Know about closure, interior point , accumulation point etc. Study Homeomorphism, embedding, weak topology. Know connectedness, Components , local connectedness and path in a topological space. Study Hausdorff space, Hereditary properties.
	PG1MATC08	Advanced Complex Analysis	<ul style="list-style-type: none"> Study properties of Analytic Functions, Harmonic functions, Entire functions etc. Acquire deep knowledge in Complex Analysis
	PG1MATC09	Ordinary Differential Equation	<ul style="list-style-type: none"> Able to solve all types of ordinary differential equations using different methods. Deep knowledge about existence and uniqueness of solution Acquire deep knowledge in power series ,legendre polynomial etc.
	PG1MATC10	Measure Theory and Integration	<ul style="list-style-type: none"> Analyse measurable sets and Lebesgue measure Describe integral and convergence of measure Study measurability in product space



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PG1MATC1 1	Analytic Number Theory	<ul style="list-style-type: none"> To illustrate how general methods of analysis can be used to obtain results about integers and prime numbers to help students develop an understanding of: - arithmetic functions and their utility in the analytic theory of numbers including the distribution of primes To use generating functions as an essential tool in understanding a variety of combinatorial phenomena that arise in the additive theory of numbers and elsewhere
PG1MATC1 2	Functional Analysis	<ul style="list-style-type: none"> Identify different spaces Analyse different type of operators Apply Zorn's lemma
PG1MATC1 3	Topology II	<p>After completing this course the student will be able to:</p> <ol style="list-style-type: none"> Study distinguish between Urysohn lemma and Tietze extension theorem. Know about Tychonoff embedding and Urysohn Metrization theorem. Study Nets, Fields and its convergence. Know countable compact, sequentially compact.
PG1MATC1 4	Partial Differential Equations and Integral Equation	<ol style="list-style-type: none"> Students can characterize partial differential equations and solve some elementary type partial differential equations using some specific methods. Students can understand some applications of partial differential equations like wave equation heat equation etc. Students will be able to understand basics of integral equations and properties and some special type of solutions.



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	PG1MATC1 5	Optimization Techniques	<p>Students will be able</p> <ol style="list-style-type: none"> 1. to solve integer linear programming problems and non linear programming problems. 2. Gets basics of Game theory and solution of rectangular games. 3. Understand different problems in network analysis and solutions.
4	PG1MATC1 6	Spectral Theory	<ul style="list-style-type: none"> • Get the idea of spectrum. • Study the properties of operators
	PG1MATE0 1	Number Theory and Cryptography	<ul style="list-style-type: none"> • Solve congruences • Discuss Quadratic residues and Jacobi symbol • Get the idea of Cryptography and apply it into some extent.
	PG1MATE0 2	Multivariate Calculus, Integral Transforms and Manifolds	<ul style="list-style-type: none"> • Analyze multivariate data and the dependence structure of variates to extract the useful information from a massive dataset • Analysing different objectives in a wide manner • Knows basic definitions concerning elements of smooth manifolds.
	PG1MATE0 3	Differential Geometry	<p>Students will be able to</p> <ol style="list-style-type: none"> 1. Understand the geometry of Scalar and vector valued functions in higher dimensions. 2. Analyze the properties of functions and derivatives with geometrical illustrations. 3. Study the properties of surfaces and functions defined on surfaces in higher dimensions.
	PG1MATE0 4	Theory of Wavelets	<ul style="list-style-type: none"> • Becomes familiar with the new field-wavelet theory. • Able to identify the application of linear algebra, abstract algebra and functional analysis in image processing data transfer etc.



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