

Program Specific Outcome and Course Outcome for B.Sc, Mathematics

Program Specific Outcome

- PSO 1:** Think in a critical manner.
- PSO 2:** Formulate and develop mathematical arguments in a logical manner.
- PSO 3:** Familiarize the students with suitable tools of mathematical analysis to handle issues and problems in mathematics and related sciences.
- PSO 4:** Acquire good knowledge and understanding to solve specific theoretical and applied problems in advanced areas of mathematics and statistics.
- PSO 5:** Provide students/learners sufficient knowledge and skills enabling them to undertake further studies in mathematics and its allied areas on multiple disciplines concerned with mathematics.
- PSO6:** Understand, formulate and use quantitative models arising in social science, business and other contexts
- PSO 7:** Students will be aware of and able to develop solution oriented approach towards various Social and Environmental issues.

COURSE OUTCOMES

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Department of Mathematics					
Sl No	Year	Course Code	Course Name	CO No.	Course Outcome
1	2018-2019	MATH111	Theory of Equations and Trigonometry	CO1	Describe the relation between roots and coefficients.
				CO2	Transform the equation through roots multiplied by a given number, increase the roots, decrease the roots, removal of terms
				CO3	Develop the skills to solves problems based on algebra and trigonometry
				CO4	Acquire the knowledge of teams and concepts used in theory of equations and trigonometry
2	2018-2019	MATH112	Differential Calculus	CO1	Select and apply appropriate models and differentiation techniques to solve problems
				CO2	Students will be familiar with the techniques of differentiation of function with real variables
				CO3	Understand the concept of curvature and calculate curvature when the curve is defined in Cartesian form
				CO4	Apply derivative tests in optimization problems appearing in social sciences, physical sciences, life sciences and a host of other disciplines.
3	2018-2019	MATH121	Analytical Geometry – 3	CO1	Describe the various forms of equation of a plane, straight line, Sphere, Cone and Cylinder.
				CO2	To study the angle between a line and a plane, length of perpendicular from a point to a line
				CO3	Computation of shortest distance between two skew lines
				CO4	To learn analytical geometry of 3 dimensions which include study of conics, planes, lines, sphere and cone.
4	2018-2019	MATH122	Integral Calculus	CO1	Students will be familiar with the techniques of Integration of function with real variables
				CO2	To develop an understanding of Triple Integral.
				CO3	To understand the Integral Problem formulation and solution method.
				CO4	To describe methods for solving Beta and Gamma Function

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5	2018-2019	MATH231	Abstract Algebra	CO1	Relate abstract algebraic constructs to more familiar number sets and operations and see from whether the constructs derive
				CO2	Understand the basic concepts of group actions and their applications
				CO3	Know the fundamental concepts in ring theory such as the concepts of ideals, quotient rings, integral domains, and fields
				CO4	The students will actively participate in the transition of important concepts such homomorphisms & isomorphisms from discrete mathematics to advanced abstract mathematics.
6	2018-2019	MATH232	Real Analysis - I	CO1	Acquire the knowledge of role Real number system
				CO2	Understand the real number system and countable concepts in real number system
				CO3	Learn the concept of convergence of sequence and series of Real number system
				CO4	Identify the continuity of a function defined on metric spaces
7	2018-2019	MATH233	Logic and Lattices	CO1	Understand the concepts of Mathematical logic such as Connections, Concepts of Tautology etc..
				CO2	Study the concepts of Relations and Functions
				CO3	Gains knowledge in Formal languages and Automata
				CO4	Classify the concept of Lattices and Boolean Algebra
8	2018-2019	MATH241	Linear Algebra	CO1	Explain the theory behind relations and functions and identify domains and images of functions, based on the structures given
				CO2	Understand the concepts of vector spaces, subspaces, bases, dimension and their properties
				CO3	Relate matrices and linear transformations, compute eigenvalues and eigenvectors of linear transformations
				CO4	Learn properties of inner product spaces and determine orthogonality in inner product spaces

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Sl No	Year	Course Code	Course Name	CO No.	Course Outcome
9	2018-2019	MATH242	Real Analysis -II	CO1	Understand several standard concepts of metric spaces and their properties like openness, closedness, completeness, Bolzano-Weierstrass property, compactness, and connectedness
				CO2	Learn the different definitions related to Riemann Integrals
				CO3	Understand the consequences of various mean value theorems for differentiable functions.
				CO4	Improve the skill of problem solving in Real Analysis
10	2018-2019	MATH243	Vector Calculus	CO1	Acquire the knowledge of concepts of the geometric properties surfaces , three dimensional vectors , vector valued functions , planes , lines and the cylindrical and spherical coordinate systems
				CO2	Learn the graph, differentiate, integrate, and solve applied problems involving parametric equations and vector-valued functions.
				CO3	Manipulate vectors to perform geometrical calculations in three dimensions.
				CO4	Realize importance of Green, Gauss and Stokes' theorems in other branches of mathematics.
11	2018-2019	MATH351	Programming Using SciLab-Practical	CO1	The aim of this lab is to introduce you to the software SciLab for numerical computations and in particular familiarizing yourself with the SciLab Desktop, basic commands through the Command window and output through the Graph window.
				CO2	Interpret and visualize simple mathematical functions and operations thereon using plots/display
				CO3	Analyze the program for correctness and determine/estimate/predict the output and verify it under simulation environment using SCILAB tools
				CO4	Evaluate, analyze and plot results
12	2018-2019	MATH352	Complex Analysis - I	CO1	Understand basic complex number system and varieties of operations, analyses and problems
				CO2	Understand the significance of differentiability and analyticity of complex functions leading to the Cauchy Riemann equations.
				CO3	Learn complex differentiation, Planer mappings, analytic and harmonic functions, conformal mapping
				CO4	Improve the skill of problem solving in Complex Analysis

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SI No	Year	Course Code	Course Name	CO No.	Course Outcome
13	2018-2019	MATH354	Ordinary Differential Equations	CO1	Understand the genesis of ordinary differential equations
				CO2	Learn various techniques of getting exact solutions of solvable first order differential equations and linear differential equations of higher order
				CO3	Use the techniques of finding Laplace transforms and inverse Laplace transforms of real functions and their application in solving ordinary differential equations
				CO4	Formulate mathematical models in the form of ordinary differential equations to suggest possible solutions of the day to day problems arising in physical, chemical and biological disciplines
14	2018-2019	MATH356	Mathematical Statistics - I	CO1	Acquire the basic knowledge of probability axioms and rules and the moments of discrete and continuous random variables as well as be familiar with common named discrete and continuous random variables
				CO2	how to derive the probability density function of transformations of random variables and use these techniques to generate data from various distributions
				CO3	Understand the most common discrete and continuous probability distributions and their real life applications
				CO4	how to translate real - world problems into probability models
15	2018-19	MATH357	Programming using SCILAB	CO1	Develop programs in SCILAB
				CO2	Perform mathematical Modeling in SCILAB
				CO3	To develop programs for 2-D graphics for Contour plots
				CO4	Application in solving ordinary differential equations using Scilab

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SI No	Year	Course Code	Course Name	CO No.	Course Outcome
16	2018-2019	MATH361	Programming Lab in Numerical methods-Practicals	CO1	Implement simple mathematical functions/equations in numerical computing environment such as MATLAB/SCILAB
				CO2	Develop and implement stable and accurate numerical methods to solve linear systems of equations and find roots of linear and non-linear eqns
				CO3	Perform numerical interpolation, curve fitting, integration, and differentiation
				CO4	Develop and implement stable algorithms to solve ordinary differential equations and simple partial differential equations.
17	201819	MATH362	Complex Analysis -II	CO1	Acquire the knowledge of Complex Integration
				CO2	Learn the role of Cauchy Goursat theorem and Cauchy integral formula in evaluation of contour integrals
				CO3	Understand the convergence, term by term integration and differentiation of a power series
				CO4	Learn Taylor and Laurent series expansions of analytic functions, classify the nature of singularity, poles and residues and application of Cauchy Residue theorem
18	2018-19	MATH364	Partial Differential Equations	CO1	Acquire the knowledge of PDE
				CO2	Expose different techniques of finding solution of PDE
				CO3	Apply a range of techniques to solve first & second order partial differential equations
				CO4	Model physical phenomena using partial differential equations such as the heat and wave equations
19	2018-2019	MATH366	Mathematical Statistics - II	CO1	Perform correlation, regression analysis and appropriate statistical tests for real life situations
				CO2	Explore small and large data-sets to create testable hypotheses and identify appropriate statistical tests
				CO3	Apply the different sampling methods for designing and selecting a sample from a population.
				CO4	Formulate null and alternative hypotheses and apply small, large sample and non-parametric tests in real life problems
20	2018-2019	MATH367	Numerical Methods	CO1	Obtain numerical solutions of algebraic and transcendental equations
				CO2	Learn about various interpolating and extrapolating methods
				CO3	Solve initial and boundary value problems in differential equations using numerical methods.
				CO4	Apply various numerical methods in real life problems

