St.Pious X Degree & PG College for Women
Autonomous College, Affiliated to OU
Re-Accredited with A+ Grade by NAAC
Snehapuri Colony, Nacharam, Hyderabad

B.Sc COURSE OUTCOMES(2025-26)

SEMESTER I

Remember, Understand, Apply, Analyze, Evaluate, Create :R, U, Ap, Az, E, C

Title of the Course: Differential Equations				
Sem- I	Credits: 5	Course Code – MAT101	Year/Group: I B.Sc (MPCS,MSCS,MSDS ,AI&ML) HPW: 6	
Course Outcomes				Blooms Level
CO1	Discuss the key concepts of Differential Equations of first order and first degree			U
CO2	Explain and solve the first order differential Equations			U,Ap
CO3	Implement and Examine the Higher order Linear Differential Equations			Ap,Az
CO4	Classify and solve the Partial Differential Equations			U,Ap

SEMESTER II

Title of the Course:Real Analysis				
Sem-II	Credits: 5	Course Code:MAT201	Year/Group: I B.Sc (MPCS,MSCS,MSDS,AI&ML) HPW: 6	
Course Outcomes				Blooms Level
CO1	Discuss, solve and examine the key concepts of Real Numbers, Open Sets ,Closed Sets, Countable sets Real Sequences			U,Ap,Az
CO2	Discuss, apply the key concepts of , Series, their converges, Limits and Continuity			U,Ap,Az
CO3	Define, discuss and test the convergence theory in Differentiation			R,U,Az
CO4	Define, Discuss and apply the concepts of Riemann Integration, Refinement of Partitions, Limit sums and Integrable Functions			R,U,Ap ,Az

SEMESTER III

<table>
<tr><td colspan="4" align="center">Title of the Course: Differential and Vector Calculus</td></tr>
<tr><td>Sem- III</td><td>Credits: 5</td><td align="center">Course Code – MAT301</td><td>Year/Group: I B.Sc (MPCS,MSCS,MSDS,AI&ML) HPW: 6</td></tr>
<tr><td colspan="3" align="center">Course Outcomes</td><td>Blooms Level</td></tr>
<tr><td>CO1</td><td colspan="2">Define and Discuss the key concepts of Partial derivatives, Homogeneous Euler functions</td><td>Ap,R,U</td></tr>
<tr><td>CO2</td><td colspan="2">Demonstrate and Examine the Taylor's theorem for a function of two variables</td><td>Ap,Az</td></tr>
<tr><td>CO3</td><td colspan="2">Define , Discuss and apply the concept of Line Integrals, Surface Integrals and Volume Integral</td><td>R,U ,Ap,</td></tr>
<tr><td>CO4</td><td colspan="2">Apply and Discuss the Principles of the Gradient ,Divergence and Curl</td><td>R,U,Ap,C</td></tr>
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SEMESTER IV

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<tr><td colspan="4" align="center">Title of the Course:Algebra</td></tr>
<tr><td>Sem-IV</td><td>Credits: 5</td><td>Course Code:MAT401</td><td>Year/Group: II B.Sc (MPCS,MSCS,MSDS,AI&ML) HPW: 6</td></tr>
<tr><td colspan="3" align="center">Course Outcomes</td><td>Blooms Level</td></tr>
<tr><td>CO1</td><td colspan="2">Explain, Solve and examine the fundamental concepts of Groups, Subgroups and their properties</td><td>U,Ap,Az</td></tr>
<tr><td>CO2</td><td colspan="2">Demonstrate and construct the nature of Cyclic and Permutation Groups and Interpret Normal Subgroups, Homomorphism, their properties and applications</td><td>U,Ap,C</td></tr>
<tr><td>CO3</td><td colspan="2">Explain, Solve and examine the fundamental concepts of Rings, Subrings and their properties</td><td>U,Ap,Az</td></tr>
<tr><td>CO4</td><td colspan="2">Define and Discuss the concept of Ideals,Quotient Rings,Euclidean Rings and Polynomial Rings</td><td>R,U,Ap,Az</td></tr>
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SEMESTER V

Title of the Course: Linear Algebra	
Sem-V **Credits: 5** **Course Code:MAT501**	**Year/Group: III B.Sc (MPCS,MSCS,MSDS,AI&ML)** **HPW: 6**

Course Outcomes		Blooms Level
CO1	Understanding Vector Spaces, Subspaces. Identify and construct bases for vector spaces, and calculate the dimension of a vector space based on the number of vectors in a basis.	U,Ap
CO2	Define and Discuss the concept of Linear Transformation ,Range Kernak , Rank Nullity and Composition of Linear Maps	R,U,Ap
CO3	Discuss a Linear Map ,Linear Operations and Rank & Nullity matrix	R,U,Az
CO4	**Analyze** the properties of eigenvalues and eigenvectors, such as their multiplicity (algebraic and geometric) and their role in determining matrix diagonalizability and a**pply** the inner product Spaces to calculate angles,	U,Ap,E,Az

SEMESTER VI

Title of the Course:Numerical Analysis	
Sem:VI **Credits: 5** **Course Code:MAT601**	**Year/Group: III B.Sc (MPCS,MSCS,MSDS,AI&ML)** **HPW: 6**

Course Outcomes		Blooms Level
CO1	Explain and Solve the systems of simultaneous linear equations using both direct methods like Bisection method & iterative methods.	U,Ap,Az,E
CO2	Understand and apply different interpolation methods (e.g., Lagrange interpolation, Newton's interpolation)	U,Ap,E
CO3	Apply numerical integration techniques (e.g., Trapezoidal rule, Simpson's rule) to approximate definite integrals	Ap,Az,E
CO4	Apply appropriate numerical methods to solve various differential equations.	Ap,Az,E

B.C.A COURSE OUTCOMES(2025-26)

SEMESTER I

Title of the Course:Mathematical Foundations of Computer Science				
Sem-I	Credits: 4	Course Code:BSC101	Year/Group: I B.C.A	HPW: 4
Course Outcomes				Blooms Level
CO1	Describe and use the key concepts of Fundamentals of Logics, Set theory and Properties of the Integers			U,Ap
CO2	Identify and Compare the Relations and Functions			U,Az
CO3	Describe and relate the fundamental concepts of Matrices and Eigen values ,Eigen Vectors and Diagonolization			U,Az
CO4	Describe and relate Recurrence relations and Generating Functions.			U,Az
CO5	Discuss, Compare and construct the Graph Theory and Trees.			U,Az,C

SEMESTER III

Title of the Course:Applied Mathematics				
Sem-III	Credits: 4	Course Code:BSC301	Year/Group: II B.C.A	HPW: 4
Course Outcomes				Blooms Level
CO1	Define, Solve and formulate Partial Differentiation in functions of two variables and Homogenous Functions			R,Ap,C
CO2	Explain and differentiate Differentiation of Composite Functions, Maxima and Minima of functions and Lagrange's Method of Undetermined Multipliers			U,Az
CO3	Explain and Evaluate the concepts of System of Linear Equations, their solutions and Linear Independence			U,E
CO4	Explain and Evaluate the concepts of Vector Spaces, Subspaces, Eigen Vectors and Eigen Values			U,E
CO5	Explain and Evaluate the concept of Diagonalization and Applications to Differential Equations			U,E