

**Adv. M. N. Deshmukh Art's Commerce and Science College ,Rajur**

**Annual planning for the year 2022-2023**

**S .Y .Bsc . (Mathematics Paper II)**

Sr. No.	Month	Total Lectures	Name of the topic
	Sem- I		<b>Numerical Methods &amp; its Applications.</b>
1	June 2022	10	<b>CH -1 Solution of algebraic and transcendental Eqns.</b> 1.1 Error and their computation. 1.2 Bisection method. 1.3 The method of false position. 1.4 Newton – Raphson method.
2	July 2022	09	<b>CH – 2 Interpolation.</b> 2.1 Finite difference operator and their relation ( Forward, Backward and shift operator.) 2.2 Differences of polynomial. 2.3 Newton’s interpolation formulae(Forward and backward) 2.4 Lagranges Interpolation formula.
3	Aug 2022	06	<b>Ch – 3 Numerical Differentiation and integration.</b> 3.1 Numerical differentiation. 3.2 Numerical integration, General quadrature formula. 3.3 Trapezoidal rule. 3.4 Simpsons one third rule. 3.5 Simpsons three eight th rule.
4	Sep 2022	08	<b>CH- 4 Numerical solution of first order ordinary D. E.</b> 4.1 Taylor’s method. 4.2 Picard’s method of successive approximation. 4.3 Euler’s method.
5	Oct 2022	04	4.4 Modified Euler’s method. 4.5 Runga – Kutta methods.
	<b>Sem- II</b>		<b>Vector Calculus ( Paper –II(A))</b>
1	Dec	08	<b>CH – 1 Vector Valued Function.</b>

	2022		<p>1.1 Curves in Space, Limit &amp; Continuity, Derivatives &amp; Motion, differentiation Rules for Vector Function , Vector Function of constant length.</p> <p>1.2 Integrals of Vector Function.</p> <p>1.3 Arc length along a space curve, Speed on smooth curve, Unit Tangent Vector.</p>
2	Jan 2023	10	<p>1.4 Curvature of Plane Curve, Circle of Curvature for Plane Curves, Curvature and Normal Vector for a space curve.</p> <p><b>CH – 2 Integrals.</b></p> <p>2.1 Line Integral of Scalar Functions, Additivity, Line integral in the plane.</p> <p>2.2 Vector Field, Gradient Field, Line Integral of vector field, Line integral with respect to <math>dx</math> , <math>dy</math> , <math>dz</math>.</p> <p>2.3 Work done by force over a curves in space, Flow integrals and Circulation for velocity fields, Flow across the simple closed curve.</p>
3	Feb 2023	10	<p>2.4 Path independence , Conservative and Potential Function.</p> <p>2.5 Divergence , two forms for Green’s theorem, Green’s theorem in the plane (Proof for special region)</p> <p><b>CH – 3 Surface Integrals.</b></p> <p>3.1 Parameterization of Surface, Implicit Surface.</p> <p>3.2 Surface Integrals , Orientation of Surfaces.</p> <p>3.3 Surface Integrals of Vector Fields.</p>
4	Mar 2023	08	<p><b>CH – 4 Application of Integrals.</b></p> <p>4.1 The Curl of Vector Field, Stokes Theorem( Without Proof) , Conservative Fields and Stokes Theorem.</p>