

Subject Code: 1SC2040305	Subject Title: Differential Geometry
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Course Objective:

- This is an introductory course in Differential Geometry which provide a working knowledge of the basic definitions and theorems of the different types of curves, surfaces, Gaussian and mean curvature described in detail in the syllabus.

Teaching scheme (hours) per week		credit		Theory Marks		Practical Marks		Total
Theory	Tutorial	Theory	Tutorial	University Assessment	Cont. Assessment	University Assessment	Cont. Assessment	
4	1	4	1	60	40	-	-	

Subject Contents				
Unit. No	Topic	Total Hours	Weight (%)	
1	Space curves, planar curves, parameterization, curvature, torsion, signed Curvature.	18	25	
2	Frenet-Serret equations, fundamental theorem of curve theory. Isoperimetric Inequality, The Four Vertex Problem.	18	25	
3	Surfaces: smooth surfaces, tangents, normals, first fundamental form, isometries of surfaces, conformal mappings of surfaces, surface area.	18	25	
4	Second fundamental form, normal and principal curvature, Meunier's theorem, Euler's theorem, Gaussian and mean curvature, Gauss map.	18	25	

Course Outcome:

On successful completion of the course, students should be able to

- Students should be able to apply the conceptual structure of Curves, Surfaces, first and second fundamental form, To gain skill in problem solving and critical thinking in geometry.

List of References:

- Andrew Pressly, Elementary Differential Geometry, SUMSeries, 2004.
- Goetz A., Introduction to Differential Geometry, Addison Wesley, Publ. Co., 1970.
- Weatherburn, C.E., Differential Geometry in Three Dimensions, Cambridge University Press, 1964.