

## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mathematics - NOC:Curves and Surfaces

Subject Co-ordinator - Prof. Sudipta Dutta

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- Lecture 1 - Level curves and locus, definition of parametric curves, tangent, arc length, arc length parameter
- Lecture 2 - How much a curve is  $\hat{A}$  curved $\hat{A}$ , signed unit normal and signed curvature, rigid motions, constant
- Lecture 3 - Curves in  $R^3$ , principal normal and binormal, torsion
- Lecture 4 - Frenet-Serret formula
- Lecture 5 - Simple closed curve and isoperimetric inequality
- Lecture 6 - Surfaces and parametric surfaces, examples, regular surface and non-example of regular surface, t
- Lecture 7 - Transition maps of smooth surfaces, smooth function between surfaces, diffeomorphism
- Lecture 8 - Reparameterization
- Lecture 9 - Tangent, Normal
- Lecture 10 - Orientable surfaces
- Lecture 11 - Examples of Surfaces
- Lecture 12 - First Fundamental Form
- Lecture 13 - Conformal Mapping
- Lecture 14 - Curvature of Surfaces
- Lecture 15 - Euler's Theorem
- Lecture 16 - Regular Surfaces locally as Quadratic Surfaces
- Lecture 17 - Geodesics
- Lecture 18 - Existence of Geodesics, Geodesics on Surfaces of revolution
- Lecture 19 - Geodesics on surfaces of revolution; Clairaut's Theorem
- Lecture 20 - Pseudosphere
- Lecture 21 - Classification of Quadratic Surface
- Lecture 22 - Surface Area and Equiareal Map

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