

FMCC 402 Geometry of Curves and Surfaces (3-1-0)

Module I : (14 hour)

Introduction to differential geometry-curves in two and three dimensions, curvature and torsion for space curves, existence theorem for space curve, Serret-Frenet formula for space curves.

Module II : (12 hour)

Inverse and implicit function theorems, Jacobian theorem, surfaces in R^3 as two dimensional manifolds, tangent space and derivative of maps between manifolds.

Module III : (14 hour)

First fundamental form, orientation of a surface, second fundamental form and the Gauss map, Mean curvature and scalar curvature, integration of surfaces, Stocks formula, Gauss- Bonnet theorem.

TextBooks :

1. DoCarmo, Differential Geometry, Academic Press.
2. T.J. Willmore, Differential Geometry.

Reference Books:

1. A.N. Pressley, Elementary Differential Geometry, Springer.
2. C. E. Weatherburn, Differential Geometry of Three Dimension, Cambridge University Press.