

INSTITUTE OF MATHEMATICS
College of Science
University of the Philippines Diliman

Math 146 Course Syllabus

A. Course Catalogue Description

Course Number	Math 146
Course Title	Introduction to Differential Geometry
Course Description	Elementary topology; calculus of several variables; curves and surfaces; theorems of Stokes and Gauss; differential forms
Prerequisite	Math 23/equiv. and Math 140/equiv., or COI
Course Credit	3 units
Number of Hours	3 hours/week

B. Course Content

- I. Course Introduction and Orientation
- II. Review of Elementary Topology
 1. Calculus of several variables
 2. Basic topology
- III. Curves
 1. Arc length parametrization
 2. Local Theory: Frenet Frame
 3. Some Global Results
- IV. Surfaces: Local Theory
 1. Parametrized surfaces and the First Fundamental Form
 2. Gauss map and the Second Fundamental Form
 3. Codazzi and Gauss equations and the Fundamental Theorem of Surface Theory
 4. Covariant differentiation, parallel translation and geodesics
- V. Surfaces: Further Topics
 1. Holonomy and the Gauss-Bonnet Theorem
 2. Theory of differential forms
 3. Calculus of variations and surfaces of constant mean curvature

For a more detailed syllabus, send an email request to ddapr@math.upd.edu.ph.