

INSTITUTE OF MATHEMATICS
College of Science
University of the Philippines Diliman

Math 148 Course Syllabus

A. Course Catalogue Description

Course Number	Math 148
Course Title	Introduction to Projective Geometry
Course Description	Projective planes and spaces
Prerequisite	Math 110.1 and Math 140
Course Credit	3 units
Number of Hours	3 hours/week

B. Course Content

- I. Introduction to Projective Geometry
 1. Axioms for a Projective Plane
 2. The Principle of Duality
 3. Examples of Projective Planes
- II. Perspective Triangles
 1. Triangles and Quadrangles
 2. Desargues' Theorem
 3. Harmonic Sequence
- III. Perspectivity
 1. Perspectivity, Projectivity
 2. Fundamental Theorem of Projective Geometry
 3. Pappus' Theorem
- IV. The Projective Plane $\pi(\mathbb{F})$ over a Field \mathbb{F}
 1. Analytic Geometry on $\pi(\mathbb{F})$
 2. Matrix Representations of Perspectivities
- V. Collineations
 1. Projective Collineations on $\pi(\mathbb{F})$
 2. Fundamental Theorem in $\pi(\mathbb{F})$
 3. Cross Ratio
 4. Harmonic Sequences and Cross Ratio
- VI. Conics in the Projective Plane
 1. Pascal's Theorem
 2. Tangent Line to Point Conics
- VII. Affine Transformations
 1. Similarity Transformations
 2. Isometries

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