UNIVERSITY OF CALGARY

FACULTY OF SCIENCE
Department of Mathematics and Statistics

PURE MATHEMATICS 425
"GEOMETRY"

Calendar Description: H(3-1T)
Introduction to some of the following geometries. Discrete geometry, finite geometry, hyperbolic geometry, projective geometry, synthetic geometry..
Prerequisite: Pure Mathematics 315 or consent of the Division.
Suggested Text: "Foundations of Projective Geometry" by Robin Hartshorne.
Reference: "Projective Geometry and Moden Algebra" by Kadison and Kromann.

Syllabus

Topics	**Number of Hours**
Affine planes, projective planes, the vanishing line.	3
Fields, the planes AG(2,F), PG(2,F)	3
Homogeneous coordinates, quadratic forms, conics, pole and polar, Euclidean examples	3
Curves in PG(2,F), dual curves, polar curves	3
Desargues theorem, automorphisms, 3-dimensional space	3
Automorphisms of planes	3
Projectivities, Harmonic Conjugates	3
Pappus and the fundamental theorem	3
Introduction of coordinates	3
Coordinates and (V,I) transitivity	3
Homologies, elations, conjugacy, projective collineations	3
Collineations and matrix collineations, transitivity, the fundamental theorem of projective geometry	3
TOTAL:	**36**

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