

PROJECTIVE GEOMETRY (MATH 526)

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Contents.

Week 1: Projective spaces over fields

Week 2: Frames, the principle of duality, Desargues and Pappus

Week 3 and 4: The projective groups

Week 5: The cross ratio + exercises

Week 6 and 7: Projections and perspectivities

Week 8: Incidence geometry, (axiomatic) projective planes

Week 9: Algebraic varieties, basic concepts

Week 10: Quadrics

Week 11: Polarities, absolute points and examples

Week 12 and 13: Polar spaces

Week 14: Veronese, Segre and Grassmann variety (Plücker and Klein)

Prerequisites.

The course requires basic knowledge of algebra (linear algebra, groups, rings and fields).

References.

[1] R. Casse: Projective Geometry, An Introduction (2006)

[2] H. S. M. Coxeter: Projective Geometry (1987)

[3] R. Hartshorne: Foundations of Projective Geometry (1967)

[4] D. R. Hughes and F. C. Piper: Projective planes (Springer-Verlag 1970).

[5] P. Samuel: Projective Geometry (1988)