

189–348A
Topics in Geometry

Olga Kharlampovich

MWF 12:30

- Symmetry and groups, Plane ornaments
 1. Isometries,
 2. Rosette groups,
 3. Strip patterns,
 4. Wallpatterns,
 5. Finite groups,
 6. Cayley Diagrams,
 7. Symmetry in the real world

- Euclidean and non-Euclidean geometry
 1. History
 2. Plane Euclidean geometry,
 3. Affine transformations in the Euclidean plane,
 4. Finite groups of isometries of E^2 ,
 5. Geometry on the sphere,
 6. The projective plane P^2 ,
 7. The hyperbolic plane
 8. Minkowski Space-Time

Textbooks:

L. Fejes Toth, Regular figures, Pergamon Press, 1964.

D.W. Farmer, Groups and symmetry, A guide to discovering mathematics, AMS, Mathematical world, Vol. 5, 1996

P.J. Ryan, Euclidean and non-Euclidean geometry, An analytic approach, Cambridge university press, 1997.

Prerequisites A semester of linear algebra or (and) some familiarity with vectors and matrices. All the necessary background material will be included in the lectures.

Evaluation 20% Midterm or Project+ 15% Assignments +65% Final

Office hours MWF 1:30–2:30, Burn. 926 , tel. 398-3808,

e-mail: olga@math.mcgill.ca

homepage: www.math.mcgill.ca/~olga