

U560 – GEOMETRY (Fall 2006)

- Time:** Mondays & Thursdays 11:45 am – 1:25 pm
- Place:** 102 Kariotis
- Instructor:** Professor Egon Schulte
469 Lake Hall, 373-5511
schulte@neu.edu, www.math.neu.edu/~schulte
- Office hours:** MWTh 10:30–11:30 am
- Text:** G.E.Martin, *Transformation Geometry*, Undergraduate Texts in Mathematics, Springer (1982).

Course Outline

The course covers Chapters 1–11 of the textbook.

- Week of September 4: Chapter 1 – Introduction
1.1 – Transformations and Collineations
1.2 – Geometric Notation
- Week of September 11: Chapter 2 – Properties of Transformations
2.1 – Groups of Transformations
2.2 – Involutions
- Week of September 18: Chapter 3 – Translations and Halfturns
3.1 – Translations
3.2 – Halfturns
- Week of September 25: Chapter 4 – Reflections
4.1 – Equations for a Reflection
4.2 – Properties of a Reflection
- Week of October 2: Chapter 5 – Congruence
5.1 – Isometries as Products of Reflections
5.2 – Paper Folding Experiments and Rotations
- Week of October 9: Chapter 6 – The Product of Two Reflections
6.1 – Translations and Rotations
- Week of October 16: 6.2 – Fixed Points and Involutions
Chapter 7 – Even Isometries
7.1 – Parity

- Week of October 23: 7.2 – The Dihedral Groups
- Week of October 30: Chapter 8 – Classification of Plane Isometries
8.1 – Glide Reflections
8.2 – Leonardo’s Theorem
- Week of November 6: Chapter 9 – Equations for Isometries
9.1 – Equations
Chapter 10 – The Seven Frieze Groups
10.1 – Frieze Groups
- Week of November 13: 10.2 – Frieze Patterns
Chapter 11 – The Seventeen Wallpaper Groups
11.1 – The Crystallographic Restriction
- Week of November 20: 11.2 – Wallpaper Groups and Patterns
- Week of November 27: 11.2 – Wallpaper Groups and Patterns (cont.)
Review
- Week of December 4: Review
- Final Exam Period: Tuesday, December 12, 2006 at 1:00 pm**

MTH U560 course description from Undergraduate Catalog:

Studies classical geometry and symmetry groups of geometric figures, with an emphasis on euclidean geometry. Teaches how to formulate mathematical propositions precisely and how to construct and understand mathematical proofs. Provides a line between classical and modern geometry with the aim of preparing students for further study in group theory and differential geometry.