Pure Mathematics 319   Transformation Geometry

(see Section 3.5C of Faculty of Science www.ucalgary.ca/pubs/calendar/current/sc-3-5.html
and Course Descriptions: http://www.ucalgary.ca/pubs/calendar/current/course-main.html)

Reference text: "Transformation Geometry", by G.E. Martin. (not necessarily a required text)

Syllabus

Topics	Number of hours
Ch.1: Introduction (geometry and algebra)	3
Ch.2: Transformations	1
Ch.3: Translations and halfturns	3
Ch.4: Reflections	1
Ch.5: Isometries	3
Ch.6: Translations and rotations	2
Ch.7.1: Even isometries	3
Ch.8.1: Glide reflections	2
Ch.7.2 and 8.2: Symmetry	4
Ch.10: Frieze groups	4
Ch.11: Wallpaper groups	6
Student project and presentations	3
Mid-term exam	1
	36

PMAT 319
Course Outcomes

By the end of this course, students should be able to:

1. List all symmetry groups of bounded subsets of the Euclidean plane.

2. List all seven Frieze groups and seventeen Wallpaper groups.

3. Identify the symmetry group of any given Frieze patterns or Wallpaper patterns.

Subject specific knowledge

By the end of this course, students should be able to:

4. Restate definitions of transformations, collineations, dilatations, isometries, reflections, halfturns, translations, rotations and glide reflections.

5. List all even and odd isometries.

6. Reproduce the proofs of named theorems.

7. Produce proofs involving objects in the course such as transformations, collineations, dilatations, isometries by using their definitions.

8. Predict what would be the product of two given isometries and construct a proof of that.

9. Recognize the Frieze group of a given Frieze pattern.

10. Recognize the Wallpaper group of a given Wallpaper pattern.

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16:11:03
Hours change 2005/06
Prerequisite change: 2009:07:01
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