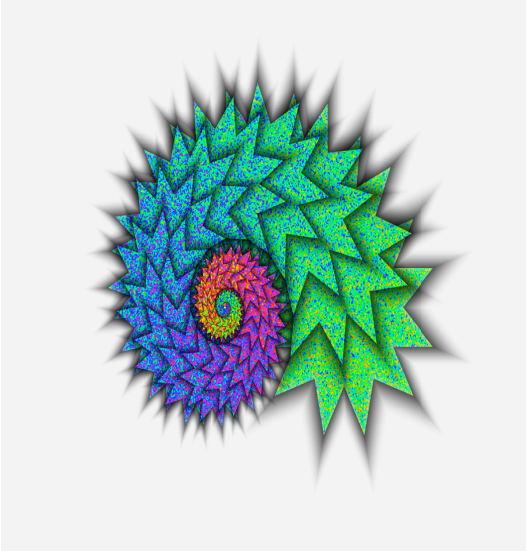
Math in Art - MATH 1020 / FA 1020



Summer 2010

Instructors:
D. Kalajdzievska
& C. Enns

T/Th 6-8:30 pm, 205 Armes

Text: Math in Art
(by Dr. S. Kalajdzievski
and Dr. R. Padmanabhan)

TOPICS:
Euclidean constructions (with ruler and compass), golden mean, golden rectangles, Fibonacci spirals, symmetries and other organizing principles, frieze patterns, wall paper groups, tilings and tessellations, string art and conics, perspective drawing, Platonic solids and regular polyhedra, Escher-style hyperbolic art, nature/mathematics as a fractal artist, and isotopy and homotopy of topological objects.

GOAL:
To allow students to see how mathematics can transform the universal order we see around us into natural aesthetic so that they can be faithfully reproduced as art, to show how "beauty" can be quantified or generated, and to demonstrate the visual beauty of mathematics and the mathematics undercurrents in visual arts.

EVALUATION SCHEME:

Art Projects (format, deadline to be determined by C. Enns)	40%
One Mid-term Exam (to be set by D. Kalajdzievska)	25%
Final Exam Aug. 7 (2 hours, covers all topics, DK)	35%

1020 Tentative Schedule of Topics / Dates:

WEEK	DAY	TOPICS	MATH (DK)	ART (CE)
1	1	Course overview, Euclidean constuctions	June 22	June 22
	2	Golden ratio, Fibonnaci sequence	June 24	
2	3	Geometric constructions, ratio, proportion, and aesthetics MAKE-UP CLASS (no class July 1)		June 25
	4	Symmetries and their classifications	June 29	
3	5	Symmetry and Fractals		July 6
	6	Fractals and Mid-t review	July 8	
4	7	**MIDTERM** (in class), Perspective Drawing	July 13	July 13
	8	Perspective drawing, conic constructions	July 15	
5	9	Perspective drawing, conics in art and design		July 20
	10	Planar tilings and platonic solids	July 22	
6	11	Hyperbolic Geometry & Topology	July 27	
	12	Platonic Solids and Hyperbolic Geometry		July 29
7	13	Topological Transformations & course summary		Aug 3
	14	Final review	Aug 5	
		FINAL EXAM	Aug 7	