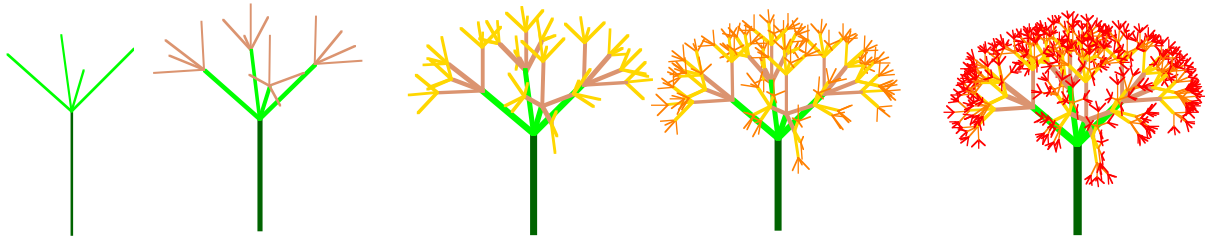


Math In Art

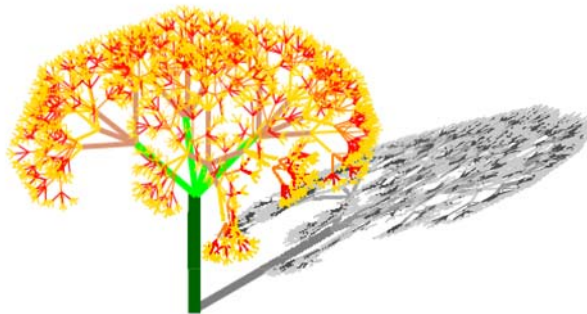
Slot 4, 8:30 - 9:50 AM
Tuesdays & Thursdays
205 Armes, Machray Hall.

Instructors
Dr. S. Kalajdziewski, Mathematics
Professor Treble Lysenko, School of Art



MATH IN ART is a marriage between mathematics, the most abstract science, and fine arts (i.e. drawing, painting, ceramics, sculpture, architecture). In a sense, all visual arts are math arts, since they all exhibit symmetry, patterns, colour and dimension in varying degrees. But some art is more math-related than others (e.g. symmetry, perspective drawing, Escher-style art, order, chaos). In this course we will study such aspects of fine arts that are obviously math-related:

golden mean, golden rectangles, Fibonacci spirals, symmetries and other organizing principles, frieze patterns, wall paper groups, tilings & tessellations, string art and conics, perspective drawing, Platonic solids and regular polyhedra, Escher-style hyperbolic art, order, chaos, nature as a fractal artist and topological sculptures.



Goal: To allow the students of fine arts 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 them how "beauty" can be quantified so that it can be realistically reproduced. After all, it was this driving force that gave birth to projective geometry (via perspectivity) and anatomical drawings (via sculpture) during the great Renaissance.

Scheme of Evaluation

One art project/assignment (format, deadline to be determined by Professor Lysenko)	25%
One Mid-Term Exam (to be set by Professor S. Kalajdziewski)	25%
One art assignment/project (to be determined by Professor Lysenko)	15%
Final Exam in December (2 hours, covers all topics, SK)	35%
Total	100%

36.102/054.102 Mathematics in Art, January - April 2002

tentative schedule of topics/tests etc.

by S. Kalajdzievski, Mathematics (357 Machray Hall, sasho@cc.umanitoba.ca,
<http://server.maths.umanitoba.ca/homepages/sasho/courses/MathInArt/MathInArt.html>)
 Professor Treble Lysenko, School of Arts.

Date	Day #	Topic	Professor
Jan 7	1	why math for art - course overview	S.K. (Kalajdzievski)
Jan 10	2	why math for art - an artist's perspective/slides	T. L. (Lysenko)
Jan 14	3	euclidean constructions, dynamic symmetry	S. K.
Jan 16	4	golden mean, regular pentagon	S. K.
Jan 21	5	golden mean, spirals in art/architecture/slides	T. L.
Jan 23	6	Fibonacci sequence, spiral constructions	S. K.
Jan 28	7	how to play with symmetries	S. K.
Jan 30	8	symmetry and other organizing principles in art	T. L.
Feb 4	9	frieze patterns/tilings/wall-paper groups	S. K.
Feb 6	10	iterations & fractals in art & nature	S. K.
Feb 11	11	order & chaos/art project I	T. L.
Feb 13	12	problem solving (for mid-term exam)	S. K.
Feb 25	13	written mid-term test	
Feb 27	14	linear projections (from 3-D to 2-D)	S. K.
Mar 4	15	linear perspective (in art/architecture/slides)	T. L.
Mar 6	16	conic constructions and string art	S. K.
Mar 11	17	conics and polyhedra in fine arts	T. L.
Mar 13	18	five Platonic solids (why only 5?)	S. K.
Mar 18	19	hyperbolic canvas	S. K.
Mar 20	20	art perspective slides, art project II	T. L.
Mar 25	21	Escher-style artwork in the plane	S. K.
Mar 27	22	topological sculptures/genus	S. K.
Apr 1	23	topological transformations in art	T. L.
Apr 3	24	course summary (only for 40 minutes)	R. P.
Apr 3	24	course evaluation (for 30 minutes)	by students
Apr 8	25	sample problems (for Final Exam) - how to solve	S. K.
Apr 10	26	art appreciation/summary/what did we learn	T. L.
Apr ??	27	Final Exam (to be scheduled by the Administration)	U of M.

Method of Evaluation

the art project/assignment (format and deadline to be determined, T. Lysenko)	25%
the Mid-Term Exam (S. Kalajdzievski)	25%
the art assignment/project (T. Lysenko)	15%
Final Exam in December (2 hours, covers all topics, S.Kalajdzievski)	35%