

Mathematical Concepts in the Visual Arts

Instructors of Record: Prof. Götz Pfander & Prof. Isabel Wünsche

Course Number: 020029

Course Type: USC

Credits: 5.0

Time: Tuesday 19:15-22:00

Place: Lecture Hall Research II

Office Hour: by appointment

E-Mail: g.pfander@jacobs-university.de, i.wunsche@jacobs-university.de

Course Description:

Mathematics is not just about formulas and logic, but also about patterns, symmetry, structure, shape, and beauty. Throughout the centuries, artists have been fascinated by mathematical patterns and used them in their works. This course explores the interrelations between mathematical concepts and the visual arts. We will discuss a wide range of mathematical ideas such as numbers, proportions, numeric sequences, combinatorics, Euclidean and non-Euclidean geometry and their relevance for artistic creation and the visual arts. Studying some applications of mathematics in architecture, number symbolism in medieval art, the use of proportion in art, the influence of non-Euclidean geometry upon twentieth-century art, the work of Escher, etc., this course explores the many places where the fields of mathematics and the visual arts intersect.

Prerequisites:

Only second and third-year students who have previously passed at least one mathematical course (Course Nos. 100XXX, 110XXX, 120XXX, 990102, 990201) AND at least one art or literature course or USC with an art or literature component (Course Nos. 6XXXXX, 020004, 020037, 020042, 020043, 020049, 020050)

Requirements and Grades:

2 Quizzes – each 30%

Poster - 40%

Course Materials:

See campus.net

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Course Schedule:

Week 1	Tuesday, September 1, 2009	Founders Day
Week 2	Tuesday, September 8, 2009	Introduction to the Course
Week 3	Tuesday, September 15, 2009	The Fascination with Numbers: Number Series
Week 4	Thursday, September 24, 2009 17:00-21:00	Field-Trip to Neues Museum Weserburg, Bremen
Week 5	Tuesday, September 29, 2009	Proportions in Art and Architecture: The Golden Section and the Fibonacci Series
Week 6	Tuesday, October 6, 2009	The Idea of Space: From Flatland to Virtual Architecture, Guest Lecture by Michele Emmer
Week 7	Tuesday, October 13, 2009	Reading Day
Week 8	Tuesday, October 20, 2009	Quiz 1
Week 9	Tuesday, October 27, 2009	Geometry I: Euclidean Geometry and Perspective
Week 10	Tuesday, November 3, 2009	Geometry II: The Möbius Strip and Other Distinct Geometric Objects
Week 11	Tuesday, November 10, 2009	Fractals in Mathematics and Art
Week 12	Tuesday, November 17, 2009	Quiz 2, Project Discussion
Week 13	Tuesday, November 24, 2009	Islamic Art Guest Lecture by Prof. Dr. Claus-Peter Haase, SMPK
Week 14	Tuesday, December 1, 2009	Poster Presentations