

MA 207: Visual Mathematics**Winter 2015-16****Instructor:** Sarah Brewer**Email:** sgbrewer@dragons.asms.net (best way to contact me)**Office:** S201**Office Phone:** 251.441.2127**Course web site:** brewermath.com**Office Hours:** 7th period MonTuesWedFri; 4th period Thurs; 3:45 Tues**Math Lab (free tutoring):** Monday-Thursday 7:00-9:00pm in S201

Course Description: This hands-on course emphasizes visual problem solving and teaches students how to research and write about the intersection of mathematics and the visual arts. Topics vary by term and may include but are not limited to: fractal geometry, linear perspective, tiling and tessellations, symmetry groups, knot theory, modular origami, compass and straightedge constructions, and classification of surfaces.

Prerequisite: Precalculus.

Text: Kinsey & Moore. *Symmetry, Shape and Space: An Introduction to Mathematics Through Geometry.*

Grade Determination:

Homework Assignments:	~10 x 10-50 points each	
Projects:	5 x 50 points each	1 x 100 points
Presentations:	1 x 20 points	1 x 50 points
Research:	7 x 20 points	1 x 100 points

Projects:

Students will complete drawing- and sculpture-based mathematical constructions. The requirements of each project will vary depending on the topic. A final project will integrate multiple areas of study.

Research:

Students will conduct academic research into a specific area of interest in the intersection of mathematics and the visual arts. Students will be guided through this process, with graded steps along the way. Around mid-term, students will present their preliminary research to the class. The culmination of this research will be a final paper and presentation, as well as contributions to one or more Wikipedia articles.

Academic Integrity:

Students and student work will be held to a very high standard in this course. If at any point I suspect that work you submit is not entirely your own, the matter will be brought to the disciplinary committee as per the Student Handbook Plagiarism policy, and you will receive a grade of zero for that assignment.

Visual Mathematics Winter 2015-16 Tentative Schedule

Week #1 – 11/4,6

- Ch 1 – The Basics

Week #2 – 11/9,10,11,13

- Ch 2 – Grids
- Ch 3 – Constructions
- Topic Selection Due
- Knot project due

Week #3 – 11/16,17,18,20(short day)

- Ch 3 – Constructions
- Ch 4 – Tessellations
- Bibliography due

Week #4 – 11/30,12/1,2,4

- Ch 4 – Tessellations
- Ch 5 – Two-Dimensional Symmetry
- Literature Review Due
- Compass project due

Week #5 – 12/7,8,9,11

- Ch 5 – Two-Dimensional Symmetry
- Ch 6 – Other Dimensions, Other Worlds
- Thesis Statement & Outline Due

Week #6 – 12/14,15,16

- Ch 7 – Polyhedra
- Short Presentations
- Tessellation project due

Week #7 – 01/4,5,6,8

- Ch 8 – Three-dimensional Symmetry
- Ch 9 – Spiral Growth
- Research Draft Due
- Hypercube project due

Week #8 – 01/11,12,13,15

- Ch 10 – Drawing Three Dimensions in Two
- Wikipedia Review Due

Week #9 – 01/19,20,22

- Ch 11 – Shape
- Final Paper Due
- Perspective project due

Week #10 – 01/25,26,27,29

- Ch 12 – Graph Theory
- Wikipedia Entry Due

Week #11 – 02/1,2,3,5(short day)

- Ch 13 – Topology
- Final Presentations
- Final Projects due

Week #12-13 – 02/12; 15

- Presentations
- 2/16-19 - Final Exams