

MA 207 Visual Mathematics
Alabama School of Math and Science

Classroom/Office: S201

Web site: mathemartiste.com

Office Hours: Mon, Tues, Wed, Fri 10:00-10:55 (3rd per), Wed 2:45-4:40 (8th & 9th per/"after school")

Math Lab (free tutoring): Sunday-Thursday 6:30-8:30pm in S201

Khan Academy Coach Code: Q29JB9GB

Turnitin.com Class ID: 16698429, Enrollment key: asmsvismath

Winter 2017-18

Instructor: Sarah Brewer

Office Phone: 251.441.2127

Email: sbrewer@asms.net (best way to contact me)

Syllabus

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.

Next in Sequence: This course fulfills the ASMS graduation requirement in Mathematics.

If you find these topics interesting, consider enrolling in Topology, Math History and/or Counting & Probability.

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

Required Materials: 3-ring binder with dividers, notebook and graph paper, and sheet protectors
Students will regularly turn in this notebook with reflections on assignments, performance, and learning.
Dividers should be labeled as follows:

1. Handouts – This section should include the syllabus, formula sheets, photocopies of supplementary texts, or any other materials that are distributed in class that do not fall into another category.
2. Lecture Notes – This section should include any notes taken by the student from class lectures, the textbook, and videos, including any handouts with fill-in note slides, clearly labeled with the date and section or topic title, ordered according to date. Note that any lecture notes presented using the Smart Board will be exported in .pdf format and posted to my teaching web site for student convenience.
3. Problem Solving – This section should include problem sets assigned from the textbook and Khan Academy, and any other practice problems worked by the student to support the lecture notes. These should be labeled neatly with your name, date, textbook chapter & section and/or video/topic title as relevant, and problem numbers.
4. Quizzes/Tests/Projects – This section should include any Quizzes, Tests, Projects, Papers, and Reports, clearly labeled and in order by date. This is where the sheet protectors with drawing assignments should be included.
5. Reflection – This section should include study guides with material grouped by chapter/section/topic, written reflections and corrections after each graded assignment is returned, and copies of any Progress Reports received by the student.

Grade Determination:

Students will complete traditional textbook assignments, quizzes, and tests in addition to rigorous academic research and writing, oral presentation, and drawing- and sculpture-based artistic works. Major assignments (e.g. tests, full-length papers, and projects) will typically be worth 100 points each. Minor assignments (e.g. quizzes, short papers, and homework assignments) will vary in point value, typically ranging from 10 points to 50 points. A final exam component will be worth 200 points.

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.

Tutoring: All students are encouraged to attend my weekly Office Hours and the evening student-run Math Lab for help with homework and studying. Even if you do not have a specific question about the material, come by and work on your homework free from distractions and with math experts nearby to help. When you come, make sure you have both your notebook and textbook with you. The primary goal of tutoring is to help you figure out the answers for yourself, not to give you the answer, but if you get stuck, please speak up, even if a Math Lab proctor or myself are helping another student. One-on-one tutoring is available from the Academic Support Team, coordinated by the counseling office.

Make-up policy: Any homework checks, quizzes, or tests missed due to unexcused absences will receive a grade of zero. Homework assigned during a student's absence must be turned in within three days of the student returning to class. Arrangements for make-ups must be done BEFORE the assignment is missed. In case of unexpected illness, this can be done via email. Note: make-up assignments will, in general, be more difficult than the original.

Cell phone policy: Phones should be SILENT or OFF (not on vibrate) and away. I reserve the right to confiscate any phone that I deem a distraction. Use of cell phones during quizzes or tests will be considered academic dishonesty and result in a grade of zero. Occasionally, we may use smartphone apps in class, but phones should remain away unless otherwise specified.

Attendance and Tardiness Policy: Three tardies count as one unexcused absence. A student with three unexcused absences may be assigned a grade of WF for the course. Students are responsible for acquiring any missed notes and assignments (as these are posted on the web, this should not be a problem, but check with a classmate to see if you missed anything not posted).

Tentative Topic Schedule

Week 1 – November 6-10

- 2.2 Celtic Knots

Week 2 – November 13-17 (11/17 is a short day)

- 3.1-3.2 Compass Constructions & the Golden Ratio

Week 3 – November 27 – December 1

- 4.1-4.3 – Regular, Semiregular, Irregular, & Penrose Tilings

Week 4 – December 4-8 (12/6 is 1st grade posting; 12/8 is Parents' Day)

- 5.1-5.2 – Kaleidoscopes & Rosettes

Week 5 – December 11-12

- 5.3,5.4,5.5 – Frieze, Wallpaper, & Islamic Lattice Patterns

Week 6 – December 18-20 (12/20 is a short day); January 4

- 6.1-2 – Flatland & the Fourth Dimension

Week 7 – January 8-12 (01/10 is 2nd grade posting)

- 7.1,7.2,7.3 – Pyramids, Prisms, Antipyramids, Platonic solids, Archimedean solids

Week 8 – January 16-19 (No class 01/15)

- 9.2 – Fibonacci numbers & Phylotaxis

Week 9 – January 22-26

- 10.1 – Perspective

Week 10 – January 29-February 2; February 5 (01/31 is 3rd grade posting)

- Presentations

Final Exams – February 6-9