

COURSE OVERVIEW:

The unifying theme of this course is the examination, from multiple perspectives, of important “big ideas” of geometry as described in the *Principles and Standards for School Mathematics* (NCTM 2000). This includes reflection on the concepts, principles and mathematical processes in the geometry curriculum; common difficulties encountered by students; alternatives for structuring learning; and applications of technology, materials, and resources for teaching geometry. The selection of course content is guided by the following expectations outlined in the geometry standard for grades PK-12 (*Principles and Standards for School Mathematics*, p. 41)

Instructional programs from pre-kindergarten through grade 12 should enable all students to—

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
- specify locations and describe spatial relationships using coordinate geometry and other representational systems;
- apply transformations and use symmetry to analyze mathematical situations;
- use visualization, spatial reasoning, and geometric modeling to solve problems.

Materials:

You will need the usual tools of the trade: ruler, protractor, compass, graph paper, scissors, calculator, etc.

You will need a computer with Internet access and *The Geometer's Sketchpad* software.

We will make regular use of *The Geometer's Sketchpad* program, so you will need to have it on your computer. There are three options for getting it:

- a) If you have a NMU laptop, go to the help desk and have the program installed on your machine. (No cost, but they will only install it on NMU laptops.)
- b) If your district, ISD, or school has a site license, you can have a copy installed on your computer under the appropriate site license.
- c) If no site license is available to you, you can go to Key Curriculum Press <<http://www.keypress.com>> and purchase a student version for \$39.95. (That is a very good price.) The student version does everything the site license does, but it requires that the disk be in the computer when the program is in use.

We will use a number of different manipulatives (such as tangrams and pattern blocks) that you can quite easily make for yourself or, if you choose, for your classroom. Information and instructions will be given in class. You are encouraged to make your own in whatever quantities you wish.

Recommended resource: *Navigating through Geometry in Grades XXX* (select appropriate grade level for your classes), NCTM 2002.

A geometry textbook appropriate for the grade level you teach. You can check books out from the mathematics-science resource center or bring your own book from your school.

Grading:

Grading is on an A-F scale; grades are based on regular attendance and active participation in class activities, knowledgeable discussion of assigned readings, completion of problems and assignments, and presentations to the class.

If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability services in the Disability Services Office at 1104 University Center (227-1737). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and university guidelines.