

**Northern Michigan University**  
**Department of Mathematics & Computer Science**  
**MA331-1 (10649): Geometry I**  
**MTWF 2:00 – 2:50pm West Science 3801**  
**Winter 2009**

**Instructor:** Dr. Carol Bell

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**Office Hours:** MTW 1:00-2:00, R 12:00 – 1:00, or by appointment

\*\*\* "Walk-in's" are welcome as long as I do not have a prior commitment. E-mail is a good way to contact me to ask questions or voice your concerns related to the class.

**Text and Other Course Requirements:**

Exploring Geometry with The Geometer's Sketchpad, Dan Bennett, Key Curriculum Press (2002). ISBN 1-55953-581-4

Please bring with you to every class the following items.

- 1) a ruler
- 2) a protractor
- 3) a compass

This course uses WebCT (Web Course Tools) so you must have Internet access in order to complete assignments and receive course information. To get to the WebCT log-on screen, go to <http://webct.nmu.edu/webct/entryPageIns.dowebct>. Your user id and password should be the same as your NMU campus email user id and password.

This course also uses the software program *The Geometer's Sketchpad* by Key Curriculum Press. As long as you have a university issued laptop, you may have the program installed at no charge to you at the computer help desk. If you are using a non-university issued laptop, it is your responsibility to purchase the program. Please have the program installed on your computer by class time **Monday, January 26**.

**Prerequisite:**

MA211 or consent of instructor.

**General Introduction and Goals:**

This course is required of all secondary education mathematics majors. It may also be used as an elective for the general mathematics major. Material in the course is essential for mathematics teachers and its major purpose is to prepare students to teach high school geometry.

The course considers classical synthetic and metric geometry as an axiomatic-deductive structure. While many of the Euclidean theorems are familiar to the students from past experience, the course provides an overview of the subject and studies theorems, which heretofore have been accepted without proof. Some attention is given to elementary logic (quantifiers, rules of inference, forms of proof) and to the philosophy of mathematics

(axiomatic structures, independence, models, consistency proofs). The student is also introduced to non-Euclidean geometries with the intent to strengthen their knowledge of definitions within Euclidean geometry.

In addition to various geometries, the student is also introduced to current real world applications of Geometry. With the use of The Geometer's Sketchpad, systems such as the Global Positioning System and other applications will be studied.

### **Content Outline:**

This course will examine topics from the following areas:

- A. Euclidean Geometry
  - a) Similarity theory
  - b) Polygonal regions and their areas
  - c) circles, arc measure, arc length, and area
  - d) Ruler and compass constructions on the Geometer's Sketchpad
  - e) The Angle Trisection Problem
  - f) Volumes and surface areas of solids
- B. An introduction to various other geometries and systems
  - a) Analytic
  - b) Parabolic
  - c) Taxicab
- C. Mission Mathematics by NCTM
  - a) Global Positioning System
  - b) Independent study of various geometrical problems

**Assessment Format:** Specific information on each assessment measure is provided below.

- **Class Participation (10%):** You will be required to participate in online discussions of problems or other topics that are posted via WebCT. Included in your participation grade is that each of you critiques other students' work that is posted on the discussion board in WebCT.
- **Homework (20%):** Exercises from the concepts discussed in class will be assigned regularly.
- **Projects and Presentations (40%):** A variety of assignments will be given throughout the course that address the topics discussed in class. Some of the assignments will be presented to the class. It is essential that you are in attendance to present your work to the class. This will also allow you to receive feedback from other students and the instructor.
- **Examinations (30%):** There will be two in-class exams and a final exam. Each exam will consist of questions from the material discussed in class. A university-approved excuse is generally a prerequisite for rescheduling any exam. The final exam will be comprehensive. The date and time of the final exam are **Tuesday, April 28, 2:00 – 3:50pm**. The final exam schedule is also available online.

**Grading Scale (%):** Your course grade will be based on the percentages outlined under Assessment Format. Corresponding grades as a percentage of the total are listed below.

100 – 95.0: A	86.4 – 82.5: B	76.4 – 72.5: C	66.4 – 62.5: D
94.9 – 89.5: A-	82.4 – 79.5: B-	72.4 – 69.5: C-	62.4 – 59.5: D-
89.4 – 86.5: B+	79.4 – 76.5: C+	69.4 – 66.5: D+	59.4 – 0: F

**Appropriate Classroom Laptop Use:**

Although having a laptop in class opens up new learning possibilities for students, sometimes students utilize it in ways that are inappropriate. Refrain from instant messaging, e-mailing, surfing the Internet, playing games, writing papers, doing homework, etc. during class time. Acceptable uses include taking notes and working on assigned in-class activities, projects, and discussions that may be enhanced by laptop use. It is easy for your laptop to become a distraction to you and to those around you so please use good judgment in using your laptop during class.

**NMU’s Non-Discrimination Statement:**

Northern Michigan University does not unlawfully discriminate on the basis of race, color, religion, sex, national origin, age, height, weight, marital status, familial status, handicap/disability, sexual orientation, or veteran status in employment or the provision of services, and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities an equal opportunity to participate in all programs and activities.

Anyone having civil rights inquiries may contact the Equal Opportunity Office, 502 Cohodas Hall, telephone number 906-227-2420.

**ADA Statement:**

If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability Services in the Disability Services Office by: coming into the office at 2001 C. B. Hedgcock; calling 227-1700; or e-mailing [disserv@nmu.edu](mailto:disserv@nmu.edu). 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.