MTH 341: College Geometry
Course Information Sheet and Syllabus[1]
Fall 2011

Instructor: Dr. Susan Cooper

Office: Pearce Hall, Room 206G *Email:* s.cooper@cmich.edu *Phone:* 989-774-2893

Office Hours: Tuesdays & Thursdays 9:30 a.m. – 11:30 a.m.; Wednesdays 11:00 a.m. – 12:00 p.m.; or by appointment

Correspondence: The most reliable way to reach me is via email.

Class Times and Location: TR 8:00 a.m. – 9:15 a.m., Pearce Hall – Room 123A

Course Web Page: We will use *Blackboard* which can be found at http://blackboard.cmich.edu/.

Text: *Roads to Geometry* by Edward C. Wallace and Stephen F. West (Third Edition)

Additional Course Materials: We will be using technology (in particular, TI-Nspire and Cabri Geometry II software) on occasion, so it is recommended you purchase a TI-Nspire CAS Graphing Calculator and/or TI-Nspire CAS computer software. This software is also available in the computer lab in Pearce Hall if you choose not to purchase these tools. You will also need a compass and straight edge (ruler) for this course.

Course Description and Objectives: In this course we will explore axiomatic systems via the development of geometry. An axiomatic system involves a set of object names, but the objects are left undefined or open to interpretation. The system also has unproved statements (called *axioms*) that make assertions about the object names. All other statements about the object names are then logical deductions of the axioms. One axiomatic system that you are well-acquainted with is the *Peano axioms* on which the natural numbers are based. This axiomatic system provides us with formalism – many of the arithmetic facts we take for granted can be logically derived from a small set of axioms.

Why focus on geometric axioms? One of the great advantages of studying mathematics is that it helps one develop the ability to handle abstract ideas. Geometry allows us to cultivate this ability with concrete examples, mathematical rigour, and beautiful applications. The deep history of geometry also provides great insight into the development of the field of mathematics and its branches. After completion of the course, students will be able to:

- Demonstrate basic properties of an axiomatic system.
- Use the axiomatic method to demonstrate principles of Euclidean geometry.
- Demonstrate knowledge of history of geometry as it pertains to the establishment of a deductive system.
- Demonstrate understanding of main theorems in a variety of geometric topics as finite geometries, non-Euclidean geometries, transformations in the plane.
- Use interactive geometry software to explore and solve geometric problems.

We will be covering selected sections from Chapters 1 through 6 of your textbook, as time allows. We may also add additional material not covered in the textbook to the content of the course.

Group Project: All students will complete a group project. The project will consist of both a written submission and class presentation. All group members must fully participate in the written submission and presentation. Full details for the project assignment will be given later in the semester.

Homework: The best way to learn mathematics is by doing mathematics. Homework will be assigned and collected regularly. A subset of the problems from each assignment will be selected for grading. Expectations on homework submissions will be provided with the first homework assignment. Homework will be graded for correctness, clarity, and style/creativity. Provided feedback is meant to *improve* your mathematical solutions and communication.

[1] *The details stated in this course syllabus are subject to change at the discretion of the instructor. Announcements concerning all (if any) changes will be made in a timely fashion.*

Exams: There will be two midterm exams and one cumulative final exam. The schedule is:

Exam	Date	Time and Location
Exam 1	Thursday, October 6	8:00 a.m. – 9:15 a.m., Pearce Hall – Room 123A
Exam 2	Tuesday, November 22	8:00 a.m. – 9:15 a.m., Pearce Hall – Room 123A
Final Exam	Tuesday, December 6	8:00 a.m. – 9:50 a.m., Pearce Hall – Room 123A

Missed/Late Work Policies: The following policies will be followed:

(1) Homework and projects must be turned in by the beginning of class on the day that they are due. Late work will receive no credit. However, you will receive two "No Questions Asked Coupons" each allowing you to turn in any one homework assignment up to one day late with no penalty.
(2) Make-up exams will only be given if arrangements are made with prior notification and you have a reasonable excuse for missing the scheduled exam. If you must miss an exam for an unforeseen, excusable absence, you must provide proper documentation for that absence. Make-up exams may be administered for exceptional circumstances and only by the discretion of the instructor. No make-up exams will be granted for the final examination.

Course Grades: Final grades will be determined as follows:

Task	Percentage of Grade
Group Project	10%
Homework	20%
Exams	20% each
Final Exam	30%

Percentage Grade	Lowest Letter Grade Earned
$\geq 90\%$	A−
$\geq 80\%$	B−
$\geq 70\%$	C−
$\geq 60\%$	D−

Classroom Atmosphere: A part of learning is making mistakes. We want to establish a classroom atmosphere where the inevitable false starts and mistakes become an opportunity to improve – not an opportunity for embarrassment. Please be constructive and polite in questioning your colleagues in class.

Expectations: I ask that you have a well-defined sense of professionalism, that you always put forth your best effort, and that you develop a sense of responsibility to your educational community. I ask that you exhibit a persistent desire to learn. In return I will provide you with significant support. Also:

- Be positive, open, and responsive to feedback.
- Be an active participant - mathematics is learned by doing; this includes being responsible for material when a class is missed, participating fully in classroom activities (please, turn your cell phones off during class), critically thinking about the mathematics during and outside of class. *In order for this class to be successful, it is imperative that you commit to coming to class, that you commit to coming to class prepared, and that you commit to participating in class!*
- Be committed, take pride in your work, and take your work seriously.
- Be/become a "risk taker".
- Be patient with yourself - it takes time to master newly learned things. Ask for assistance when it is needed. Constantly try to improve yourself as a mathematician.
- Be academically honest. This means, for example, providing a list of the people (if any) with whom you worked on a homework assignment and providing a list of sources other than the textbook (if any) that you used to complete an assignment. Although you are encouraged to work together, you should not submit anything that you do not understand or is not written in your own words. You are obligated to adhere to the CMU Policy on Academic Integrity.

Drop Deadlines: The final day to drop a course with full cancellation of tuition is Friday, August 26. The final day to withdraw from a 16-week course is Friday, October 28 at 5 p.m.

Special Needs: CMU provides students with disabilities reasonable accommodation to participate in educational programs, activities, or services. Students with disabilities requiring accommodation to participate in class activities or meet course requirements should first register with the office of Student Disability Services (250 Foust Hall, telephone: 989-774-3018, TDD 989-774-2568), and then contact me as soon as possible.