Math 231: Topics in Geometry
Winter Semester, 2015
M,T,W,R 12-12:50 in WS 3616

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<th>Course Instructor:</th>
<th>Dr. Stephen Smith</th>
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<tr>
<td>Office:</td>
<td>1304 New Science Facility</td>
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<tr>
<td>Office Phone:</td>
<td>906 227-1594</td>
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<tr>
<td>E-mail:</td>
<td>StepSmitATnmu.edu</td>
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<tr>
<td>Office Hours:</td>
<td>M &amp; W 1-2:30; Th: 10:30-11:30; or by appointment</td>
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NOTE: This course is on EduCat. A number of documents for the course will be posted there for you to print out for use during class time. Some assignments, along with clarifications or elaborations of assignments, may be posted there. Also, check your nmu.edu email account regularly for emails about the course.

Brief Description of the Course:
The course is designed to introduce students to a broad range of ideas in geometry. Topics include: visualization and communication skills; understanding shapes and their properties; measurement especially as it relates to selection of units, accuracy, and precision; concepts related to length, area, and volume; and transformational geometry. The content will be taught through an informal (as opposed to axiomatic) study of the concepts. This approach focuses on understanding the mathematics underlying rules, algorithms, and relationships of geometry rather than formal proofs.

The course will include significant use of technology to develop and extend geometric concepts.

Prerequisite: A "C" or better in MA 151, MA 104, or MA 111.

Course Objectives:
Much of the course will be devoted to engagement in doing mathematics. In large part, mathematics is about abstraction and generalization. Solving individual problems by themselves is not learning mathematics. After solving one or more problems, students (at every age and grade level) must think about and use what they learn in that process to extend their understanding of mathematics in general. This is done through analyzing methods of solution--what worked & why, what didn’t work and why not. I hope that you develop a new perspective on, and an enhanced appreciation for mathematics.

This course satisfies the Foundation of Natural Sciences/Mathematics requirement.
Students who complete this course should be able to demonstrate a basic understanding of mathematical logic; use mathematics to solve scientific or mathematical problems in college classes; express relationships in the symbolic language of mathematics; and appreciate the role of mathematics in analyzing natural phenomena.

Textbooks and Materials required:
There is no required text. However, students will be required to print a number of documents for use during class sessions.
Geometer’s Sketchpad© will be loaded onto students’ laptops by help desk staff during the first class period. A scientific calculator. This is required for all in-class tests and quizzes. Do NOT expect to borrow a calculator from me or from a classmate—you will not be permitted to do so. Do not expect to use a cellphone calculator for tests or quizzes.

Student Responsibilities:

- Attend every class session. Roll will be taken daily. The in-class activities are essential for developing a deeper mathematical understanding which is not developed by merely reading the text or looking at someone else’s notes.

- Do all reading and problem assignments—both those to be turned in and those recommended (you will be responsible for concepts, conventions, and language presented in both types of assignments even if not covered directly during class).

- Allocate study time. Studying involves more than merely doing assignments. You should also spend time outside of class thinking about lectures & in-class activities. What made sense? What didn’t? If X is true for this case, why is it (not) true for another case? Do these ideas extend to similar objects? & so forth.

- Work with other members of the class. While you will generally turn in individual assignments, I STRONGLY ENCOURAGE you to work on them with others.

- Be willing to "think outside the box." Be willing to try things that may not work. As the saying goes, we learn from our mistakes.

- If you have questions, ask them—in class, in office hours, or via e-mail. I’m not good at answering questions that are not asked.

- When I ask questions in class, volunteer your ideas. Students who participate in class—whether the mathematics in their ideas turns out to be right or wrong—generally do better than students who remain silent. There is NO penalty for wrong answers during class discussions.

- Appropriate Classroom Laptop Use: Although laptops in class open up new learning possibilities for students, sometimes students utilize them in ways that are inappropriate. No 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. Inappropriate uses will be noted (silently) and will result in loss of a grade in participation points. If you use your laptop during class other than when explicitly required, at the end of the class period you will be expected to email me the notes you typed in class (I will not ask for them but will keep records of those who do/do not).

- Do NOT use your cell phone during class—even for texting. Turn your cell phone OFF—not to vibrate. A student using his/her cellphone is not participating in the classroom activities—his/her attendance and participation points will reflect this. Anything can wait a maximum of 50 minutes. (Consider whether you would want your future students texting while you are teaching. The same applies here.) Note that, just
because you have the phone in your lap & your hands below the surface of the desk does not mean I cannot tell that you are texting.

Assessment:

Some form of assessment will take place most every week. Forms of assessment include: collected homework, announced/pop quizzes, work using Geometer’s Sketchpad®, and tests. Homework will be turned in at the start of class on the due date. Homework is to be done neatly and completed on a clean sheet(s) of paper or, as appropriate, printed from Geometer’s Sketchpad® documents. Quizzes will start at approximately 12:30 & run till a couple minutes before 1 PM. Students who finish early may leave when they are done. There will be three (3) in-class tests and a cumulative final. Tentative dates for the three tests are: Feb. 4, Feb. 26, & Apr. 2. The cumulative final exam is scheduled for Monday, Apr. 27, from 12-2:00 in WS 3616. All material in the course is cumulative and once covered in class or assigned is fair game for any test or quiz.

You will be graded on classroom participation. A participant not only attends class every day (and arrives on time), but is prepared and actively contributes to learning activities. It is your responsibility to notify me in advance if you are unable to attend. Absences and tardiness negatively affect your grade. Absences due to medical reasons require a note from your health care provider.

The lowest Homework and lowest Quiz grade will be dropped. No make-ups or late work on Homework or Quizzes will be allowed. A make-up for a missed test will be given only under exceptional circumstances and with my prior approval.

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<tr>
<th>Assessment</th>
<th>Points</th>
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<tr>
<td>Homework (5 @20-40 pts each)</td>
<td>about 120 points (1 is dropped)</td>
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<tr>
<td>Quizzes (5 @ 20 pts each)</td>
<td>80 points (1 is dropped)</td>
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<tr>
<td>Tests (3 @ 100 pts each)</td>
<td>300 points</td>
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<tr>
<td>Cumulative final</td>
<td>200 points</td>
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<td>Attendance &amp; Participation</td>
<td>40 points</td>
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Grading Scale
A 93-100 percent  A- 90-92 percent  B+ 88-89 percent  B 83-87 percent  
B- 80-82 percent  C+ 77-79 percent  C 70-76 percent  C- 67-69 percent  
D 60-66 percent  E below 60 percent  

If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability Services in the Dean of Students Office at 2001 C. B. Hedgcock Building (227-1700). 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.