

**Northern Michigan University**  
**Mathematics and Computer Science Department**  
**MA331-01 (80779) Geometry for Educators (4 credits)**  
**MTWR 3:00 – 3:50pm, JXJ 3313**

**Instructor:** Dr. Carol Bell

**Office:** Jamrich 2212

**Office Phone:** (906) 227-1603

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**Office Hours:** MW 1:00 – 3:00, or by appointment

**Course Description:**

Geometry from a modern axiomatic viewpoint. Includes Euclidean geometry and an introduction to non-Euclidean geometries.

**Prerequisite:**

Admission to teacher education; MA 211 or both MSED 151 and MA 161, or instructor permission.

**Text and Other Course Requirements:**

- Optional: Elementary Geometry for College Students, Daniel C. Alexander, Brooks/Cole Publishing. (2013). ISBN 978-1-439047-90-3 (You need not purchase the text. A pdf version is available in EduCat.)
- Required: *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 NMU's Help Desk. If you are using a non-university issued laptop, it is your responsibility find another suitable program that provides a dynamic geometry environment. Please have the program installed on your computer by class time **Tuesday, August 27**. Then get the latest updates installed from [http://www.dynamicgeometry.com/Technical\\_Support/Product\\_Updates.html](http://www.dynamicgeometry.com/Technical_Support/Product_Updates.html).
- Required: Download a PDF scanner to your smartphone, such as Turbo Scan, Genius Scan, or CamScanner. The scanner allows you to take photos of your handwritten work and save it as a single pdf file so you can upload it to EduCat.

Please have available for every class the following items.

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

**Classroom Rules:**

- If you need to use the restroom or leave for another reason, then do so.
- If you have questions during class, please ask.
- No cell phones on desks. Please make sure they are set to vibrate so there are no disruptions during class.
- **If you feel sick, stay home!**

**Learning Outcomes:**

Upon successful completion of this course, a student should be able to:

1. Demonstrate knowledge of basic concepts, relationships, and results of fundamental Euclidean geometry;
2. Speak and write the language and symbolism of geometry with accuracy and precision;
3. Construct geometric figures by hand (straightedge and compass) and using technology (The Geometer's Sketchpad);
4. Make conjectures, explore cases, and draw and justify conclusions based on explorations;
5. Apply the process of mathematical proof to justify claims or conclusions that are made.

Evaluation of learning outcomes done through assignments, quizzes, and a final portfolio.

**Assessment Format:** Specific information on each assessment measure is below. All assignments must be uploaded to EduCat as either a PDF file or Sketchpad file.

- **Homework (30%):** Much of our class time will be spent exploring concepts so it is important for you to attend class and participate in any activities, some of which will be turned in for a homework grade. You should not be doing other course work or homework while in class.

You are allowed and encouraged to form study groups. If you desire, each study group may submit a *single joint homework assignment*. All members of each group will receive the common grade given for that assignment. You do not have to gain permission either to form or to dissolve a study group. If you form a study group and submit joint assignments, please follow these rules:

- No more than three members to any group.
- Each joint assignment must bear the names of each member of the group. By including your name on the group assignment, you attest that you have made a substantial contribution to the assignment.
- All hand-written assignments should be neat, clear, and organized. The instructor reserves the right to make you re-submit your written work, if it is not legible and organized.

Past-due assignments will be penalized 50% and are not accepted once solutions are posted in EduCat. Some homework assignments require that you use Sketchpad. Please note that there is no spelling check in Sketchpad. Be sure you check the spelling on your work before submitting it for a grade. As a future teacher of geometry, you need to know how to spell the words.

- **Quizzes (30%):** Each quiz consists of questions from the material discussed in class and from the text readings. A university-approved excuse is generally a prerequisite for rescheduling any quiz. If you plan to take your quizzes through Disability Services, please remember to set up your appointment one week before the scheduled quiz date.

- **Projects (20%):** Projects will address the topics discussed in class. These are longer than homework assignments so you will have more time to do them.
- **Portfolio (20%):** You will compile a portfolio consisting of various proof processes learned throughout the course. The portfolio is the final project/exam in the course.

**Attendance Policy:**

Students who are unable to attend class for various reasons must notify the instructor. When a class period is missed, students should create a plan for staying on top of the material or catching up with missed work. Present or not, students are responsible for all course work. The instructor reserves the right to reduce a student's grade due to an excessive number of absences or to give the student a failing grade in the course. Students may withdraw from the course prior to the University's class withdrawal deadline.

**Religious and Spiritual Observances:** *Faculty, staff, and students practice a variety of religious and spiritual traditions, which enhance the diversity of our campus community. NMU acknowledges that scheduling conflicts between required academic activities and religious and spiritual obligations are inevitable. Additionally, we recognize that some religious and spiritual obligations extend for multiple days and/or start at sundown of one day and extend through sundown of another day. In the event of conflicts, I will make every effort to help students avoid any negative academic consequences of observing religious and spiritual obligations. Students should consider the implications of missing class due to religious and spiritual obligations and should take into consideration these impacts when making decisions regarding any other absences during the term.*

*When an exam, assignment, or class conflicts with a religious or spiritual obligation, students are responsible for notifying me at least one week in advance of the date(s). You are not exempt from meeting course requirements or completing assignments in a timely manner as determined by this instructor.*

**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. The instructor reserves the right to reduce a student’s grade due to excessive absences.

100 – 93.0: A	86.4 – 82.5: B	76.4 – 72.5: C	66.4 – 62.5: D
92.9 – 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

**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 Coordinators of Disability Services in the Dean of Students Office at 2001 C. B. Hedgcock Building (906-227-1737 or [disability@nmu.edu](mailto:disability@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.

**Statement of Respect:**

My classroom is a place where you will be treated with respect. In this course, each voice has something of value to contribute. Please take care to respect the different experiences, beliefs, and values expressed by students, faculty and staff. Each member of this class is expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class, including the instructor.

**Important Deadlines (Full Semester Class):**

- Last day to add a class – Thursday, August 29, 5:00pm
- Last day to drop with 100% refund and no grade – Tuesday, September 3, 5:00pm
- Last day to drop with a W grade – Friday, December 6, 5:00pm