Intuitive Geometry for Elementary Teachers
Math 250, 4 Credits, Winter 2017

Instructor: Molly Andaya	**Meeting Time:** 2 – 2:50pm, M - TH
Phone: 963-1826	**Meeting Place:** Hertz 121
Office: Black, 225-33	**Final Exam:** *Friday 3/17, noon*
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Text: Math 250 course pack, available in the Wildcat Shop. Required.

Supplies (required): scientific calculator, plenty of paper, *a GOOD compass, protractor*, ruler, 3-ring binder with dividers/tabs, colored pencils, 1-2 folders with pockets

Course Description: This course is an intuitive approach to the geometry topics relative to the elementary school curriculum (and beyond). This is a CONTENT course. Prerequisite: Math 164

Course Rationale: According to the *Principles and Standards for School Mathematics* (2000), "Through the study of geometry, students will learn about geometric shapes and structures and how to analyze their characteristics and relationships. Spatial visualization – building and manipulating mental representations of two– and three–dimensional objects and perceiving an object from different perspectives – is an important aspect of geometric thinking. Geometry is a natural place for the development of students' reasoning and justification skills, culminating in work with proof in the secondary grades. Geometric modeling and spatial reasoning offer ways to interpret and describe physical environments and can be important tools in problem solving. … The notion of building understanding in geometry across the grades, from informal to more formal thinking, is consistent with the thinking of theorists and researchers." (p. 41)

Learner Outcomes for Process and Content Areas*:

Process Outcomes: The five process standards in this course are problem solving, mathematical reasoning, communicating mathematically, making connections, and representation. After completing this course, you will be able to:

Performance Outcomes
1. Problem Solving • define a problem; • use a variety of appropriate strategies to solve problems; • monitor and reflect on the problem solution and the process of mathematical problem solving.
2. Reasoning and Proof • make and investigate mathematical conjectures; • develop mathematical arguments or proofs.
3. Communication • organize and consolidate your mathematical thinking through communication; • communicate your mathematical thinking coherently and clearly; • use the language of mathematics to express mathematical ideas precisely.
4. Connections • recognize and use connections among mathematical ideas; • recognize and apply mathematics in contexts outside of mathematics.
5. Representation • create and use representations to organize, record, and communicate mathematical ideas; • select, apply, and translate among mathematical representations to solve problems.

Content Outcomes: The two content areas in this course are *Geometry* and *Measurement*. After completing this course, you will be able to:

Performance Outcomes
1. Geometry • 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
2. Measurement • understand measurable attributes of objects and the units, systems, and processes of measurement • apply appropriate techniques, tools, and formulas to determine measurements

*Outcomes are adapted from the *Principles and Standards for School Mathematics* (NCTM, 2000).

Work and Assessment:

Please remember that organization, neatness, and legibility count! A variety of assessment methods will be used to determine your level of accomplishment in this course.

Note about **late work: I don't accept late work. Please do not ask me to accept or give an extension for work that you are not prepared to turn in on time. If you are going to be absent for any reason, turn the work in early or find someone to turn in your work for you. Do not email it to me.*

Geometry Experience Paper (**30** points): See description and due date on handout.

Unit Work (**40** points per unit, we will cover 4-6 units): We will be doing a number of activities in class as part of each unit we work through. If we do not complete them in class, you will be responsible for **finishing them outside of class**. Homework will also be assigned for some of the units. Generally homework will need to be completed at home. All work for the unit will be due upon completion of the unit. I will announce the specific due dates in class.

Notebook (**20** points): I require a 3-ring binder with sections labeled: Information/Resources, Test/Quiz/Project, Fractals, Angles, Construction, Perimeter/Area, Surface Area/Volume, Tangrams. The notebook will be graded and handed back while you take your final exam.

Course Reflection (**30** points): A description of the course reflection will be handed out. It will be due the last day of class and returned for inclusion in the notebook on the day of the final.

Quizzes/Project Grades (**100** points): Each item in this category will be worth 25 points. There will be at least 5 of these scores, which could include: quizzes, special in–class activities, projects, or presentations in class (announced or unannounced). At least one of the scores in this category will be dropped for a total of 100 points. **Make–up grades…see above**. Generally, if you are absent (for any reason), you will receive a zero.

Tests (**500** points): There are **two** tests covering 1–2 units each and a comprehensive final. The first two tests are 150 points each (I may split one or both into smaller "mini-tests, still worth a total of 150 points). The final is worth 200 points. Dates will be announced well in advance. Make-up tests will be allowed only for extraordinary circumstances that are **prearranged.**

Total points = 840 – 920 based on number of units completed

In order to teach others, you must have a good command of the subject. If you do not understand the material well enough to teach it, both you and your students will suffer. Therefore, your work in this course must be assigned a grade.

93-100%	90-92%	87-89%	83-86%	80-82%	77-79%	73-76%	70-72%	67-69%	63-66%	60-62%	<60%
A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

Attendance and Professionalism: Don't skip class!
As you prepare to become a teacher, you need to become accustomed to setting a good example for students. Attendance demonstrates professionalism and dedication. High quality work and organization demonstrate professionalism, as well. Daily attendance is expected and considered a necessity for passing this course. It is also expected that your presence will contribute to and never distract from the learning of others in the class.

Academic Honesty:
There are times when it is proper to get help from others and times when it is not. Feel free to ask others for help on homework, activities, and take-home quizzes. You can only learn how to do something new by doing it correctly. During in–class tests, you must do your own work. Notes, cell phones, headphones, or similar items will not be allowed during testing situations. Calculators are allowed. Academic dishonesty will not be tolerated.

Schedule:
I will keep you informed of the schedule and assignments and you can record them on the calendar I will hand out. Keep the calendar in your notebook.

Success:
To be successful, you must work hard and **be organized**. I encourage you to form study groups (this will also be a source of information in the event you must miss class), study regularly (do not procrastinate!), take notes, and do your homework. Seek help before you are in trouble and/or too far behind. Never hesitate to ask for help from me, your classmates, or anyone else who can help. I am here to help you be successful, so when you come to my office for help, make sure to bring your notes as well as the work you have done for class. If you need help, decide what you need help with and write it down. If you are working on a problem unsuccessfully, write down the approaches you have tried. Then seek help with your paper in hand. This allows me to help you more efficiently. Finally, after you successfully complete this course, do not let this be your last course in mathematics. After you join the ranks as a teacher take more courses, attend workshops, read professional journals, attend conferences, and network with other teachers. Successful teachers continually renew themselves.

Students with Disabilities:
Students who have special needs or disabilities that may affect their ability to access information or material presented in this course (including exams) are encouraged to contact me or Disability Services (ds@cwu.edu, 963-2214, Hogue 126).

Good Luck in this course! I hope you find it enjoyable, and you leave with valuable resources for your future classroom.