

Intuitive Geometry for Elementary Teachers

Math 226/250, 4 Credits, Winter 2016

Instructor: Dr. Teri Willard

Meeting Time: Math 226: 9 am; Math 250:

2:00 pm; for both M – Th

Meeting Place: Hertz 120

Office: Bouillon Hall, Room 114

Phone: 963-2142

email: willardt@cwu.edu

Office Hours: 10:00 – 10:50 am, M – Th,
by appointment, or by email!

Text: modules to be supplied in class

Supplies: calculator, several paper folders, graph paper, a GOOD compass, protractor, ruler, 3-ring binder with 6 dividers/tabs, several plastic sleeves/pockets that fit in a binder, colored pencils,
Optional: Academic Study Guide, Geometry Part 1 in bookstore

Course Description: Prerequisite Math 164. An intuitive approach to the geometry topics relative to the elementary school curriculum.

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)

Mathematical Practices and Content Areas for Math 250*:

Mathematical Practices: These CC Standards are based upon the NCTM’s five process standards of problem solving, mathematical reasoning, communicating mathematically, making connections, and representation.

Standards for Mathematical Practices	
CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them.	CCSS.Math.Practice.MP5 Use appropriate tools strategically.
CCSS.Math.Practice.MP2 Reason abstractly and quantitatively.	CCSS.Math.Practice.MP6 Attend to precision.
CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others.	CCSS.Math.Practice.MP7 Look for and make use of structure.
CCSS.Math.Practice.MP4 Model with mathematics.	CCSS.Math.Practice.MP8 Look for and express regularity in repeated reasoning.

Content: The content areas are Geometry and Measurement. These topics will be studied while employing various manipulatives and hands-on experiences. The mathematical practice standards will be integrated into the content areas. More detailed objective sheets will be provided for each unit of study.

Content Topics
1. Geometry <ul style="list-style-type: none">• analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments and proofs about geometric relationships• apply transformations and use symmetry to analyze mathematical situations• use visualization, spatial reasoning, and geometric modeling to solve problems
2. Measurement <ul style="list-style-type: none">• 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) and Common Core State Standards Initiative.

Work and Assessment

Please remember that organization, neatness, and legibility count! Points will be deducted for late work at the discretion of the instructor, with the exception of Take-Home Quizzes, which will **never** be accepted late for any reason.

Geometry Experience Paper (20 points): See description and due date on handout.

Homework (60 points): Homework will be due on the day of each Unit Test. If you need help with homework, arrange for help from me, classmates, or the Math Center.

Activities (90 points): We will be doing a number of activities in class. If we do not complete them in class, you will be responsible for finishing them outside of class. These will be due by unit on the day of the test for that unit. Activities must be clearly labeled for full credit. You will leave these activities in the module and highlight the title. If you need additional paper to complete the activity, place the activity directly behind the appropriate page in the module and label it with the correct title.

Notebook (35 points for compilation and explanation): You need a 3-ring binder with 6 sections labeled Introduction, Information, Modules (Activities), Homework, Quizzes/Tests, and Resources. All modules/activities previously scored must be in the notebook on the due date to receive full credit.

Quizzes/Daily Grades (125 points): Each item in this category will be worth 25 points. There will be at least 6 of these scores, which could include: quizzes and special in-class activities or presentations in class (announced or unannounced). At least 1(one) of the scores in this category will be dropped for a total of 125 points. Make-up grades are not possible.

Tests (500 points): There are three tests covering 1–2 modules each and a comprehensive final, including both new and old material. The first three tests are 100 points each. The final is worth 200 points. Dates will be announced well in advance. Make-up tests will be allowed only for extraordinary circumstances that I must know about in advance. You must do your own work on in-class tests. Notes, cell phones, headphones, or similar items will not be allowed during testing situations. Calculators are allowed.

Grades: total points: 830 described above

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. See page 3 for the percent–grade equivalents.

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

Attendance and Professionalism

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. 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. Today, electronic devices, such as cell phones and personal tablets, are captivating and addictive. Professionalism includes setting these devices out of reach during class time.

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. Academic dishonesty will not be tolerated during testing situations.

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. You must also attend class, study regularly, take notes, and do the homework and activities. You must 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 serve you and help you be successful. 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. Write down the helpful hints you receive. 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.

Additional Note

Students with disabilities who wish to set up academic adjustments in this class should give me a copy of their “Confirmation of Eligibility for Academic Adjustments” from the Disability Support Services Office as soon as possible so we can discuss how the approved adjustments will be implemented in this class. Students without this form should contact the Disability Support Services Office, Bouillon 205, or dssrecept@cwu.edu or 963–2171.

Good Luck in this course! I hope you find it enjoyable and never hesitate to talk to me if you have any problems.