



## Math 5002 Syllabus Geometry and Problem Solving

- COURSE:** Math 5002 (3 credit hours)
- PREREQUISITES:** MATH 5001
- TIME & LOCATION:** Mondays, Wednesdays & Fridays 9:05 am – 9:55 am,  
Aderhold Hall, Room 319
- INSTRUCTOR:** Ana Maria Medina-Rusch  
Office: Aderhold 105  
Phone: 678-488-3306  
E-mail: [anarusch@uga.edu](mailto:anarusch@uga.edu)  
Webpage: <http://math.coe.uga.edu/rusch/ana.html>
- OFFICE HOURS:** Mondays & Wednesdays from 10:00 to 10:45 am
- TEXT:** *Mathematics for Elementary Teachers, 2<sup>nd</sup> Edition*,  
by Sybilla Beckmann, Addison-Wesley, 2003.

### COURSE DESCRIPTION

A deep examination of relevant topics in mathematics for elementary school teaching. The course includes geometric shapes and their properties, measurement, especially length, area, and volume and other applications of elementary mathematics.

### COURSE OBJECTIVES

To strengthen and deepen knowledge and understanding of measurement and basic geometry and how they are used to solve a wide variety of problems. In particular, to strengthen the understanding of and the ability to explain why various procedures and formulas in mathematics work. To strengthen the ability to communicate clearly about mathematics, both orally and in writing. To promote the exploration and explanation of mathematical phenomena. To show that many problems can be solved in a variety of ways. Computer technology will be used.

### COURSE CONTENT

1. Visualization
2. Angles
3. Geometric Shapes and their properties
4. Constructions with straightedge and compass
5. Transformation geometry: reflections, translations, rotations
6. Symmetry. Congruence. Similarity
7. Measurement, especially length, area, and volume
8. Converting measurements
9. Principles underlying calculations of areas/volumes (Why various area/volume formulas are valid)
10. Area versus perimeter
11. The behavior of area and volume under scaling

## ATTENDANCE

You are expected to attend all classes for their entirety. Students are accountable for assignments and material covered during an absence. A student who incurs an excessive number of absences may be withdrawn from a class at the discretion of the professor. (See the UGA attendance policy at <http://bulletin.uga.edu/bulletin/ind/attendance.html>). A student withdrawing after the first exam will receive a WF unless he/she has a marginally passing (D) average in the class (taking into account all relevant data: homework grades, exams, attendance).

## CLASS WORK

This class is part of your preparation as a professional. As a professional, you should engage in collegial discussions about professional practice and you should constantly seek to enhance and refine your professional knowledge. To receive a full participation score, your work in class must consistently exhibit several or all of the following:

- interest in mathematical ideas
- interest in different ways of approaching mathematical ideas
- careful listening to different ways of solving a problem
- careful evaluation of proposed methods of solution
- attempts to connect the course material to your experiences with children and teachers at schools
- attempts to connect the course material to your future teaching
- attempts to connect the course material to the [\(GPS\)](#) and to [NCTM's Standards and Focal Points](#)
- interest in learning with and from others

## MATERIALS

Please bring your activity manual, a calculator, compass, protractor, and ruler to class.

## COURSE ASSESSMENT

### TESTS & QUIZZES:

There will be 2 tests and a final exam. Tests will cover approximately 1 ½ chapter's worth of material. The final exam is comprehensive. In addition to these tests, you will have four 15-minute quizzes. See the website for test and quiz dates. There are no make-up tests or quizzes.

### HOMEWORK:

Homework is assigned weekly. See the website for assignments. As time permits these homework problems will be addressed during class. Homework is the best practice when preparing for tests/quizzes. You are welcome to work together but you should write your homework up on your own and it should reflect your own thinking. **Late homework will not be accepted.** Please consult with me as soon as possible if you are unable to hand in an assignment due to an illness or emergency.

### GRADES:

The overall course grade will be determined as follows:

Tests:	35%
Quizzes:	23%
Homework	12%
Participation	5%
<u>Final:</u>	<u>25%</u>
TOTAL	100%

Grades are determined as follows:

A	95% - 100%
A-	90% - 94%
B+	87% - 89%
B	84% - 86%
B-	80% - 83%
C+	77% - 79%
C	74% - 76%
C-	70% - 73%
D	60% - 69%
F	< 60%

**GRADING CRITERIA:**

I will determine your score on assignments and tests by the extent to which your work meets the following criteria:

- The work is factually correct, or nearly so, with only minor, inconsequential flaws.
- The work addresses the specific question or problem that was posed. It is focused, detailed, and precise. Key points are emphasized. There are no irrelevant or distracting points.
- The work could be used to teach a student: either a child or another college student, whichever is most appropriate.
- The work is clear, convincing, and logical. An explanation should be convincing to a skeptic and should not require the reader to make a leap of faith.
- Clear, complete sentences are used. Mathematical terms and symbols are used correctly. If applicable, supporting pictures, diagrams, and/or equations are used appropriately and as needed.
- The work is coherent.

I will grade your work on a 5 point scale, and I will assign points as follows:

# of points	Description	Characteristics
5	Exemplary	Work that could serve as a model for other students
4.5	Very Good	Correct work that is careful and thorough
4	Competent	Good, solid work that is largely correct
3	Basic	Work that has merit but also has significant shortcomings
2	Emerging	Work that shows effort but is seriously flawed
0	No Credit	No work submitted, or no serious effort shown

**ACADEMIC HONESTY POLICY:**

**All academic work must meet the standards contained in “A Culture of Honesty.” All students are responsible to inform themselves about those standards before performing any academic work.**

(See <http://bulletin.uga.edu/bulletin/acad/Honesty.html>)

This course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.