Course Description: A study of geometric concepts and measurement using nonstandard, English, and metric units. Topics include coordinate geometry, inductive and deductive reasoning, and concepts related to two- and three-dimensional objects including similarity, congruence, and transformations. (This course will not count toward a major or minor in mathematics.)

Prerequisite(s): Admission to Teacher Education and Permission of Instructor.

Course Objectives
By taking this course, students will be able to:

- Identify, classify, visualize, and represent 2-D and 3-D objects (triangles, quadrilaterals, regular polygons, prisms, pyramids, cones, cylinders, and spheres).
- Describe the cross-section created when a 3-D shape is sliced by a plane.
- Provide rationale for and derive the formulas (perimeter, area, surface area, and volume) of two- and three-dimensional objects (triangles, quadrilaterals, regular polygons, circles, rectangular prisms, pyramids, cones, cylinders, and spheres), with attention to units, unit comparison, and the iteration, additivity, and invariance related to measurements.
- Identify how inductive and deductive reasoning are used in the development of a proof.
- Explain proofs of the Pythagorean Theorem, the converse of the Pythagorean Theorem, and theorems related to angles.
- Create shapes that satisfy a given set of conditions. Focus on creating triangles using a set of criteria, noticing when the criteria yield a unique triangle, more than one triangle, or no triangle.
- Draw polygons in the coordinate plane and use coordinate geometry to answer questions about side length and the midpoint of a side.
- Perform basic geometric constructions including the bisector of an angle and the perpendicular bisector of a segment.
- Investigate dilations, translations, rotations, reflections, and combinations of these transformations.
- Use translations, rotations, and reflections to investigate and explain congruence; use translations, rotations, reflections, and dilations to investigate and explain similarity.
- Solve problems involving angle measures, area, surface area, volume, scale drawings, congruence and similarity.
Use appropriate technology and varied representational tools, including concrete models, strategically.

**Conceptual Framework Principles Addressed**
This course satisfies the following from the College of Education conceptual framework:

**Standard:** Prepared

**Disposition:** To think critically about the process of teaching, learning and assessment.

**Competencies:** Candidates who are prepared will:
- P1 - demonstrate strong content and pedagogical preparation in their respective subject area or professional field.

**Supplies**
- You will be provided with scissors, ruler, protractor, and compass for classroom use.
  You will need to have your own supplies for out-of-class use.
- Colored pencils

**Technology Information**
- Information about Geometer’s Sketchpad can be found at [http://www.mheducation.com/prek-12/program/MKTSP-HGA01M0.related.html?page=1&sortby=relevance&order=desc](http://www.mheducation.com/prek-12/program/MKTSP-HGA01M0.related.html?page=1&sortby=relevance&order=desc) (a 1-year student license is $9.96)
- Information about the IT Help Desk can be found at [http://gru.edu/its/help/](http://gru.edu/its/help/).
- You can get help with D2L through the University of Georgia D2L Help Center at [https://d2lhelp.view.usg.edu/](https://d2lhelp.view.usg.edu/).

**Missing a Class**
MATH 3262 class sessions are interactive, providing many opportunities for you to express your own ideas and to listen to the ideas of your fellow classmates. Much of what you learn in the course takes place by participating, sharing, and interacting with others through small-group and whole-group discussions. This kind of learning cannot take place if you are absent so regular attendance and punctuality are required.

Frequently, ideas that we introduce in one session are expanded upon and developed more fully in later sessions. Thus, every class session is important. However, if you find that you are unable to attend a particular class session or might miss a part of a session (by coming late or leaving early), **please contact me as soon as possible.** Make arrangements to turn in assignments if you are going to be absent—even if you are absent you are expected to turn the work in when it is due. You may email it to me or place it in my mailbox before class starts or send it with another student. A late assignment will be accepted only in extreme and documented situations.

**You should ask a classmate to obtain any handouts given out during the class you will miss—do not ask me for handouts that you miss.** You are also responsible for any announcements made during the class. **Impromptu class assignments (such as an unannounced quiz or classwork) cannot be made up.**

Roll will be taken; any student who is absent more than 10% of the class time (equivalent to 3 class periods) may be dropped (and most likely will be dropped) with a WF. Excused absences count toward the 10%.
**Class Participation and In-Class Activities**

Success in this course depends on your level of interaction and participation throughout the semester. As you will soon discover, we will spend most of our class time sharing ideas, solution strategies, insights, and questions. During class sessions, I will assess both your preparation for class (e.g., whether you completed the assignment and reading) and the quality of your participation in class activities by observing and interacting with you. I will be paying particular attention to your willingness to listen, to discuss, and to contribute to whole-class and group activities.

Each class period will generally include a discussion of the homework and a review of the activities from the previous class. Although the discussion will take different forms on different occasions, it will always be the case that your ideas, strategies, and questions will guide the discussion. Sometimes, you will be asked to present a problem to the class. Other times, you may be asked to share your work in a small group. Other times, you and a small group of your classmates may work on a new problem related to your homework. While I promise to support you in finding answers to your questions, please be warned that my support will **NOT** consist of simply explaining solutions of problems to you. My job is to help you develop meaningful understandings for yourself, with the help of your classmates. Because this is a student-centered class, it is of utmost importance that you attempt all of the homework problems before class and do the assigned reading so that you can participate in the discussion. Satisfactory participation in this part of class means that you are willing to share your thought processes, questions, and solutions with the class (even when you don't think you have "the right answer") and that you also support your classmates as they participate.

During each class you will generally engage in some form of investigation of a mathematical topic. Typically, you will work cooperatively with 3 or 4 of your classmates, using various curriculum materials to guide your work. This in-class work will provide a conceptual basis for your understanding of the course material. Because your subsequent readings and homework assignments will build on these investigations, they require your careful attention. On occasion, without announcement, an in-class investigation may be collected. Some class time will be spent discussing questions and ideas that arise from the group investigations. It is imperative that you spend time outside of class reflecting on the group activities so that you fully understand the concepts. Merely hearing another’s explanation is no guarantee that you understand.

**Homework**

You will be assigned reading, writing, questions, and problems for homework. All in-class activities will be based on the assumption that the required homework assignment and reading have been completed. Not all homework assignments will be taken up and graded, but you should prepare as if they will be! This does not mean that all of your answers have to be perfectly correct. It does mean that you should have thought hard about each problem, made several attempts at solving it, and developed questions and conclusions about your solution strategies. Most homework assignments will be listed in D2L; however, you are responsible for any assignment announced in class and not listed in D2L.

**Course Notebook**

You are encouraged to organize all materials (handouts, class notes, homework, readings, writings, tests) in a 3-ring binder. This notebook will be a record of your work in the course and will also serve as a tool for reflection. It will also be a valuable resource to you when you begin teaching.
The percentages to determine your course grade:

- Tests (at least 3) 
- Daily assignments which may include homework, quizzes, in-class assignments/labs, journal writings, on-line discussions, projects, etc. 
- Class participation—a rubric is provided 
- Comprehensive final exam

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<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
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<tbody>
<tr>
<td>45%</td>
<td>The grading scale is A, 100-90%; B, 89 – 80%; C, 79 – 70%; D, 69 – 60%; and F, below 60%.</td>
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<tr>
<td>25%</td>
<td>If you have a disability and wish to receive accommodations in class, please apply with the Office of Testing &amp; Disability Services.</td>
</tr>
<tr>
<td>5%</td>
<td>Dates to Remember:</td>
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<tr>
<td>25%</td>
<td>Tests</td>
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The approximate dates are:
- Tues, Feb 9
- Thurs, Mar 10
- Tues, April 19 (these are very tentative test dates)

Midterm date (if you plan to drop the course, you should do so on or before this date—there is no midterm exam) — Mon, March 7

Student holidays — MLK Day—Mon, Jan 18
- Spring Break—April 4-8

Classes end — Mon, May 2

Final exam — Fri, May 6, 5:00-7:00 PM

GCTM Conference at Rock Eagle—Information available at www.gctm.org — Wed-Fri, October 12-14, 2016 (tentative date)

Professional Organizations
- Georgia Council of Teachers of Mathematics (GCTM) at http://www.gctm.org (GCTM student membership is free if you’ve never taught professionally; otherwise, it is $20.)
- National Council of Teachers of Mathematics (NCTM) at http://www.nctm.org/membership/ ($45 student e-membership includes your choice of journal. Mathematics Teaching in the Middle School is the journal recommended for middle school teachers.

Classroom Policies
- Eating and drinking are not allowed during class since they interfere with group activities and the use of manipulatives. Therefore, cups, bottles, etc. should be capped and stored in your bag; no food is permitted.
- It is unprofessional and disruptive to text or check messages during class. Unless technology is required for class activities, please put these tools away during class.
- When you begin teaching, you MUST be on time for class—I expect no less of you in this course.
- It is distracting to me and disruptive to the class activities if you leave the classroom during the class period. Thus, only in the cases of an extreme emergency should you
leave class before the end of the period (and on test days you may not leave class until you’ve completed your test).

- Visitors, including children, are not permitted without my prior permission.
- You are expected to check your Augusta University email regularly—at least once per day.

**Academic Honesty**
Cheating will not be tolerated. Any student who is caught cheating will face serious consequences. This pertains not only to in-class work but also to outside assignments such as homework; any assignment that you submit as your own should be a report of YOUR thinking. You are expected to read and strictly adhere to the entire Academic Honesty policy for Augusta University.