I. COURSE INFORMATION

Meeting time & place: MTWR 12-1:53, CS 107
Instructor: M. Venzon
Phone: 361 825-2844
Office: CI 367
E-mail: Marcia.venzon@tamucc.edu
Office hours: Monday - Wednesday, 11-12

II. COURSE DESCRIPTION

The conceptual framework for understanding and applying properties, models and operations related to various geometric systems in problem solving settings.

This research-based course provides the conceptual framework for understanding and applying properties, models, and operations related to selected topics in applied geometry including real world applications and technology. This course is designed to have students learn mathematics through a process of inquiry which differs in significant ways from traditional mathematics classes. Students will work together as members of a community to do mathematics, which involves solving problems, making claims and conjectures, justifying and critiquing claims and conjectures, and modifying or rejecting claims and conjectures as needed. Using physical models to teach the content topics and understanding how learning occurs through their use will be a substantial portion of the class instructional plan.

The course will cover chapters 11-13 in the textbook.

III. PREREQUISITES for the COURSE

MATH 1314: College Algebra
SMTE 1350: Fundamentals of Math I
SMTE 1351: Fundamentals of Math II

IV. TEXTS and OTHER SUPPLIES REQUIRED

Required:

- *Mathematical Reasoning for Elementary Teachers*, Long, DeTemple & Millman, 6th edition plus *My Labs Plus Student Access Code*. This student access code can only be bought online or at our bookstore (not Amazon).
Website for MyLabsPlus is www.tamucc.mylabsplus.com; help line is 1 888 - 883-1299. To sign in, use your A# and if new to the system, say you forgot your password so you can reset it.

Calculator

TEKS (http://www.tea.state.tx.us/rules/tac/chapter111/index.html)

Principles and Standards for School Mathematics, NCTM, 2000 (online)

V. STUDENT LEARNING OUTCOMES

A student will:

Geometric shapes & figures

- Identify, sort, and contrast attributes of geometric curves using appropriate mathematical language
- Use physical, visual, and numerical models to represent a given problem or mathematical procedure
- Understand shape in terms of dimension, direction, orientation, and perspective
- Analyze and solve problems involving 1-D, 2-D and 3-D objects (lines, angles, circles, polygons, polyhedrons, cylinders, cones, spheres)
- Analyze relationships between 3D figures and 2D representations (projections, cross-sections, nets)

Measurement

- Recognize the effects of error on measurement
- Develop, explain and use formulas to find length, perimeter, circumference, area, surface area and volume of basic geometric figures
- Convert measurements between standard and metric systems

Transformations

- Recognize similar figures and identify scale factor
- Use translations, rotations, reflections, dilations and contractions to illustrate similarities, congruencies and symmetries of figures
- Develop, justify & perform geometric constructions using compass, straight edge and reflection devices and technology

Non-Euclidean geometries

- Apply correct mathematical reasoning to derive valid conclusions from a set of premises
- Explore axiomatic systems leading to non-Euclidean geometries such as taxicab, spherical, hyperbolic and torus geometries

Fractals

- Use symmetry to describe and create tessellations
- Distinguish between tessellations and fractals
In the context of the above expectations, a student will --

Mathematical processes
- Recognize that a mathematical problem can be solved in a variety of ways, evaluate the appropriateness of various strategies, and select an appropriate strategy for a given problem
- Evaluate the reasonableness of a solution to a given problem
- Use physical and numerical models to represent a given problem or mathematical procedure
- Recognize that assumptions are made when solving problems and identify and evaluate those assumptions

Mathematical Perspectives
- Understand and apply how mathematics progresses from concrete to representation to abstract generalizations

Communication
- Communicate mathematical ideas and concepts in age-appropriate oral, written and visual forms for a class presentation
- Use mathematical processes to reason mathematically, solve mathematical problems, make mathematical connections within and outside of mathematics, and communicate mathematically
- Reflect on personal learning, change of attitude and beliefs, and growth in understanding through mathematical journaling
- Translate mathematical statements among developmentally appropriate language, standard English, mathematical language, and symbolic mathematics

Technology
- Use appropriate technology such as calculators, computer software, and the Internet to explore, research, solve, create and compare mathematical situations and representations

Professional Development
- Be familiar with the National Council of Teachers of Mathematics and the Principles and Standards for School Mathematics, the NCTM website, and NCTM journals

VI. INSTRUCTIONAL METHODS and ACTIVITIES

The course will be a combination of lectures, individual, and group work. Students are expected to participate in group and whole class discussions by contributing with knowledge and thoughtful evaluation of the contribution of others. Using physical models to teach the content topics, and understanding how learning occurs through their use, will be a substantial portion of the class instructional plan.
VII. EVALUATION and GRADE ASSIGNMENT

Homework, classwork 25%  A  > 90%
Quizzes - chapter tests 25%  B  80% - 89%
Attendance/Presentations 25%  C  70% - 79%
Test - Final Exam 25%  D  60% - 69%
  F  < 60%

VIII. TENTATIVE COURSE SCHEDULE

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPIC</th>
<th>CONTENT</th>
<th>SECTION</th>
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<tbody>
<tr>
<td>2</td>
<td>Presentation</td>
<td>Group assignment/Family Math Night</td>
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<tr>
<td>3</td>
<td>Curves &amp; polygons</td>
<td>Simple, closed</td>
<td>9.2</td>
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<tr>
<td>3</td>
<td>Triangles &amp; quadrilaterals</td>
<td>Congruent, regular</td>
<td>9.2</td>
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<tr>
<td>4</td>
<td>Polyhedra &amp; solids</td>
<td>Right, oblique; nets</td>
<td>9.3</td>
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<tr>
<td>1</td>
<td>Measurement</td>
<td>Length, measuring systems</td>
<td>10.1</td>
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<tr>
<td>1</td>
<td>Measurement</td>
<td>Perimeter, circumference</td>
<td>10.2</td>
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<tr>
<td>2</td>
<td>Measurement</td>
<td>Area, surface area</td>
<td>10.2, 10.4</td>
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<tr>
<td>2</td>
<td>Measurement</td>
<td>Volume</td>
<td>10.4</td>
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<tr>
<td>4</td>
<td>Similarity &amp; symmetry</td>
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<td>11.2</td>
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<tr>
<td>4</td>
<td>Transformations</td>
<td>Translation &amp; scaling</td>
<td>11.1</td>
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<tr>
<td>5</td>
<td>Coordinate geometry</td>
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<td>5</td>
<td>Tessellations &amp; fractals</td>
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<td>11.3</td>
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<tr>
<td>6</td>
<td>Class presentations</td>
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<tr>
<td>6</td>
<td>Final exam</td>
<td>Thursday, August 7th, last day of class</td>
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IX. CLASS POLICIES

Classwork: Students are expected to be fully involved in class. Absences will affect your grade. Attendance will be recorded and counts 12.5% of your grade. To be qualified to make up work, students need to email Mrs. Venzon within 24 hours of a missed class. Some classwork cannot be made up. Students need to be respectful of their peers and not distract others during class time.

Important Dates:

1. Last day to drop a class is Friday, July 25th.
2. The last day of class is Thursday, August 7th.
**Academic Honesty.** University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, forgery or plagiarism.

**Notice to Students with Disabilities.** Texas A&M University-Corpus Christi complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. If you suspect that you may have a disability (physical impairment, learning disability, psychiatric disability, etc.), please contact the Services for Students with Disabilities Office, located in Driftwood 101, at 825-5816. If you need disability accommodations in this class, please see me as soon as possible.

**Grade Appeals (College of Science and Engineering Version)***

As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage ([http://sci.tamucc.edu/students/GradeAppeal.html](http://sci.tamucc.edu/students/GradeAppeal.html)). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

**X. REFERENCES**


Texas Essential Knowledge and Skills for Technology Applications
http://www.tea.state.tx.us/rules/tac/chapter126/index.html