I. COURSE INFORMATION

Instructor: Sarah Ives, Ph.D.
E-mail: sarah.ives@tamucc.edu
Webpage: http://faculty.tamucc.edu/sives/smte3352
Office location: Center for Instruction #358
Office phone: 361-825-2151
Student hours: TR 2-4, W 4-5; also by appointment
Meeting place: Center for Sciences Room 107
Meeting times: Mon & Wed, 2-3:15 p.m., January 23rd to May 7th

II. COURSE DESCRIPTION

SMTE 3352 (Catalog Description): The conceptual framework for understanding and applying properties, models and operations related to various geometric systems in problem solving settings.

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 9, 10 & 11 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

- Basic Calculator
- TEKS http://ritter.tea.state.tx.us/rules/tac/chapter111/index.html
- Principles and Standards for School Mathematics, NCTM, 2000 (can be accessed online with a membership to NCTM)

V. STUDENT LEARNING OUTCOMES

Upon successful completion of the course, class participants will:

- Geometric shapes & figures 1) Identify, sort, and contrast attributes of geometric curves using appropriate mathematical language; 2) Use physical, visual, and numerical models to represent a given problem or mathematical procedure; 3) Understand shape in terms of dimension, direction, orientation, and perspective; 4) Analyze and solve problems involving 1-D, 2-D and 3-D objects (lines, angles,
circles, polygons, polyhedrons, cylinders, cones, spheres); 5) Analyze relationships between 3D figures and 2D representations (projections, cross-sections, nets)

- **Measurement** 1) Recognize the effects of error on measurement; 2) Develop, explain and use formulas to find length, perimeter, circumference, area, surface area and volume of basic geometric figures; 3) Convert measurements between standard and metric systems
- **Transformations** 1) Recognize similar figures and identify scale factor; 2) Use translations, rotations, reflections, dilations and contractions to illustrate similarities, congruencies and symmetries of figures; 3) Develop, justify & perform geometric constructions using compass, straight edge and reflection devices and technology

In the context of the above expectations, class participants 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 instructional presentation of new material and concepts, small-group and whole-class discussion, and individual investigations of mathematics. Students may be required to give individual or group presentations. All participants are expected to actively engage in all class activities by contributing ideas and thoughtfully evaluating others’ contributions. 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. MAJOR COURSE REQUIREMENTS and ASSESSMENTS**
Final course grades will be a weighted average of mean scores using the following weights:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Teaching Project</td>
<td>30%</td>
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<tr>
<td>In class Tests</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>20%</td>
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<tr>
<td>Classwork, Homework</td>
<td>15%</td>
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<tr>
<td>Professional Development</td>
<td>15%</td>
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Final weighted grades exceeding 90% will result in a letter grade of A. Those exceeding 80% will result in at least a B; ≥ 70% will result in at least a C; ≥ 60% will result in at least a D; below 60% will result in an F.

**Teaching Project** – you will present a teaching project to the class by groups; details can be found on the course website.

**In class Tests** – there will be two in-class individual tests with focus on explanations of concepts underpinning students' understanding of figures and measurement systems.

**Final Exam** – complete a comprehensive summative evaluation of course knowledge. The final exam cannot be made-up if missed. If you have a conflict with the scheduled final exam time, please contact me at least one week prior to discuss scheduling options.

» The final exam is scheduled for **Wednesday May 15th, 1:45 – 4:15pm**

**Classwork, Homework** – participate in inquiry tasks, whole-class discussion, and both collaborative and cooperative group work activities during regularly scheduled class time. Points are earned through active engagement, thoughtful communication, and attendance. Demonstrate growth in understanding of geometry and measurement through weekly readings, writing, and performance tasks outside regularly scheduled class time.

**Professional Development** – includes a menu of opportunities designed to help you gain experience working with elementary students, parents, and teachers. Completion requires substantial time and effort outside of class. See the course website for options and criteria.

### VIII. COURSE OUTLINE (subject to change, see the course site for updated schedule)

<table>
<thead>
<tr>
<th>Meetings</th>
<th>Content</th>
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<tbody>
<tr>
<td>W Jan 23</td>
<td>Introduction to course expectations; online activities – figures in the plane</td>
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<tr>
<td>M Jan 28</td>
<td>Curves and polygons – simple, closed</td>
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<tr>
<td>W Jan 30</td>
<td>Triangles and Quadrilaterals – congruent, regular</td>
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<tr>
<td>M Feb 4</td>
<td>Polyhedra and solids – right, oblique; nets</td>
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<tr>
<td>W Feb 6</td>
<td>Measurement – length, measuring system; perimeter, circumference</td>
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<tr>
<td>M Feb 11</td>
<td>Measurement – Area, surface area</td>
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<tr>
<td>W Feb 13</td>
<td>Measurement – Volume</td>
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<td>M Feb 18</td>
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<td>W Feb 20</td>
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<td>M Feb 25</td>
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<td>W Feb 27</td>
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<td>M Mar 4</td>
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<tr>
<td>W Mar 6</td>
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<tr>
<td>M Mar 18</td>
<td>Figures &amp; Measure: <strong>In class Test</strong></td>
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<tr>
<td>W Mar 20</td>
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<tr>
<td>M Mar 25</td>
<td><strong>Teaching project presentations</strong></td>
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<td>W Mar 27</td>
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<td>M Apr 1</td>
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<td>W Apr 3</td>
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No Class: Spring Break

Similarity & symmetry: reflection, rotation, point symmetries
Meetings | Content
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M Apr 8 | Transformations: translation & scaling
W Apr 10 |  
M Apr 15 | Transformations: reflection & rotation
W Apr 17 |  
M Apr 22 | Tilings & Fractals
W Apr 24 |  
M Apr 29 | Transformations, Symmetries, Tilings: **In class Test**
W May 1 |  
M May 6 | Final exam review
W May 15 | Comprehensive **Final Exam**: 1:45-4:15pm

**IX. CLASS POLICIES**

**Attendance/Tardiness.** You are expected to attend every class session, arrive on time, and complete all in-class activities. If you need to miss part or all of a class session, please talk with a classmate and see the course website to get caught-up. Feel free to email me if you have questions.

**Late Work.** If you are unable to complete an assignment by an announced deadline, you are expected to contact the instructor in advance of the deadline. The instructor may enforce strict deadlines on some assignments (e.g., projects) by announcing a “hard deadline.” Partial credit earned for assignments submitted after deadlines will be assigned at the instructor’s discretion.

**Cell Phones/Electronic Devices.** Please silence electronic devices during class and step out of class to use them. You may not use any personal electronic device during exams.

**Written Work.** Good writing skills are important in this class. Please type and proof-read your written assignments. The Writing Center is available for help with written assignments.

**In-Class Discussion.** Everyone in the class is encouraged to express personal views with an emphasis on evidence-based claims. We have diverse backgrounds and perspectives, but by maintaining a spirit of mutual respect and acknowledgement, the hope is that classroom discussion will be inviting, lively, and informative.

**Dropping a class.** I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. The last day to drop a class is **Friday, April 12.** Just stopping attendance & participation WILL NOT automatically result in your being dropped from the class.

**Academic integrity.** 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, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a minimum of a 0 on the assignment or test.

**Disabilities Accommodations.** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Corpus Christi Hall, Room 116.
Veterans. If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

Grade appeals process. As stated in University Rule 13.02.99.C2, Student Grade Appeals, 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 Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at tamucc.edu/provost/university_rules. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

Classroom Behavior. Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

Changes. The instructor may amend the syllabus at any time prior to the final exam by announcing the changes in class.

X. REFERENCES
SBEC Technology Standards for Beginning Teachers http://www.sbect.state.tx.us/SEBECOnline/standtest/standards/techapps_allbegtch.pdf
Texas Essential Knowledge and Skills for Technology Applications http://www.tea.state.tx.us/rules/tac/chapter126/index.html