SMTE 5390 – Measurement  
Department of Mathematics and Statistics  
Summer 2015

A. COURSE INFORMATION
   
   Course number/section:  SMTE 5390.002  
   Class meeting time:  8:30 AM – 11:45 M – R June 15 – June 30  
   Class location:  CS 107

B. INSTRUCTOR INFORMATION
   
   Instructor:  Dr. Sherry L. Bair  
   Office location:  CI 358  
   Office hours:  M-F 7:30-8:20 AM & by appointment  
   Telephone:  361-825-2819  
   e-mail:  sherry.bair@tamucc.edu  
   Appointments:  Please email for an appointment

C. COURSE DESCRIPTION
   
   Catalog Course Description
   Special Topics in Mathematics

   Extended Course Description
   Essential understanding of measurement topics with a focus on research on teaching and learning with implications for the teaching of measurement topics in the K-12 classroom.

D. PREREQUISITES AND COREQUISITES
   
   Prerequisites
   Admission to graduate studies in Mathematics or the College of Education, or permission of the instructor.

   Corequisites
   None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
   
   Required Textbook(s)

   Optional Textbook(s) or Other References
   Essential Understandings of Geometry and Measurement, K-2; 3-5, 6-8 and 9-12. Select appropriate text for grade level of interest.

   Supplies
   None.
F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. Identify and describe common student errors and misconceptions related to linear, area, volume, and other measurements.
2. Discuss possible causes of student misconceptions and suggest interventions to improve student understanding.
3. Evaluate teaching materials for potential sources of student misconceptions and revise materials to reduce or eliminate these issues.
4. Evaluate teaching materials and practices for their relation to research on the teaching and learning of measurement topics.
5. Evaluate measurement tasks and student responses to these tasks.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

This class will be focused on small group activities that allow students to explore, analyze and reflect on measurement concepts and classroom instructional episodes. Whole class discussion will follow small group work to share findings, and examine additional perspectives. The instructor will facilitate discussions, assign readings and tasks that will illuminate children’s misconceptions and provide research findings that will aid students in their analysis and evaluation of the classroom situations. The intent is for students to gain additional understanding of measurement concepts as they address issues of children’s learning of the content.

H. MAJOR COURSE REQUIREMENTS AND GRADING

Classroom grades will be based on student performance in each of the following:

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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</thead>
<tbody>
<tr>
<td>Quizzes (2)</td>
<td>20</td>
</tr>
<tr>
<td>Papers &amp; Presentations</td>
<td>40</td>
</tr>
<tr>
<td>Attendance and Participation</td>
<td>10</td>
</tr>
</tbody>
</table>
Each assignment, paper, and quiz item will be graded in a holistic manner, based on a rubric. A general version of the rubric appears in the following paragraphs. Each item is scored on a basis of 0 to 4 points. At the end of the semester grades are calculated in a manner similar to grade point average, weighting the mean score in each category and using the following guidelines for determining semester grades: A (3.4 – 4.0), B (2.75 – 3.39), C (2.0 – 2.74), D (1.5 – 1.99), F (0 – 1.49). This scale makes a full distribution of grades from A to F plausible, with A's being reserved for truly outstanding performance and a grade of C representing the minimal acceptable performance.

A (4) **Outstanding performance.** Student demonstrates solid conceptual understanding and insight. All required components are clearly present. Material is well written, demonstrating coherent thoughts and reasoning as well as utilizes proper grammar, correct spelling, appropriate mathematical terminology, and notation.

B (3) **Good performance.** Student demonstrates good understanding and insight. All required components are present. Material is well written, demonstrating coherent thoughts and reasoning. Student uses appropriate mathematical terminology and notation, minor spelling or grammatical errors are possible.

C (2) **Adequate performance.** Student demonstrates adequate understanding and insight. Most required components are present. Material is written coherently, demonstrating adequate writing skills, but may contain numerous grammatical or spelling errors. Students may not use appropriate mathematical terminology, but does not misuse mathematical terminology or notation.

D (1) **Inadequate performance.** Student demonstrates inadequate understanding and insight. Required components are not present. Writing indicates little thought and reflection, or is of poor quality, making it difficult to read and understand. Students may have misused mathematical terms or notation.

F (0) **Totally unacceptable performance.** Student demonstrates little to no understanding of the content. Work is not turned in, or most of the required components are missing. Writing indicates virtually no effort.

I. **COURSE CONTENT/SCHEDULE**

The following provides an overview of the course, and is subject to change based on the needs of the class.

<table>
<thead>
<tr>
<th>DATE (DAY)</th>
<th>TOPIC</th>
<th>ASSIGNMENTS</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to course – What do we measure?</td>
<td>Readings on assessment of measurement and gather your school’s results</td>
</tr>
<tr>
<td>2</td>
<td>Linear Measures</td>
<td>Readings on research on errors and misconceptions</td>
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<tr>
<td>3</td>
<td>More on linear measures</td>
<td>Examination of classroom materials</td>
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<tr>
<td>4</td>
<td>Extending linear measures – perimeter</td>
<td>Examination of additional classroom materials and student work. Paper &amp; Presentation #1 due</td>
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<tr>
<td>5</td>
<td>Direct and indirect linear measures</td>
<td>Examination of tests and materials for real world measurement and applications. Quiz #1</td>
</tr>
<tr>
<td>6</td>
<td>Beyond linear measure – area</td>
<td>Readings from research on errors and misconceptions</td>
</tr>
<tr>
<td>7</td>
<td>Area formulas: development &amp; use</td>
<td>Examination of classroom materials</td>
</tr>
<tr>
<td>8</td>
<td>From 2D to 3D – Volume</td>
<td>Examination of classroom materials</td>
</tr>
<tr>
<td>9</td>
<td>Angle measure</td>
<td>Student work and filling the gaps in the new TEKS Paper &amp; Presentation #2 due</td>
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<tr>
<td>10</td>
<td>Other measures – Indirect and direct</td>
<td>Select readings based on grade level and interests Quiz #2</td>
</tr>
<tr>
<td>11</td>
<td>Course wrap up</td>
<td>Final presentations</td>
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<tr>
<td>12</td>
<td>Final Exam</td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES

Attendance/Tardiness
You are expected to attend class. Attendance will be taken daily and excessive absences will result in a lowered grade. In a 12 day course, anything beyond one day of absence is deemed excessive. You are also expected to be on time for class. Tardiness of less than 10 minutes will count as a ¼ day absence. Tardiness between 10 minutes and 45 minutes will count as ½ day absence. More than 45 minutes and less than 1 hour 30 minutes will be ¾ of an absence. Anything more than an hour and a half will count as a full day absence.

Late Work and Make-up Exams
Late work will not be accepted. Make-up exams or quizzes are only when the individual has contacted the instructor prior to class time when the original assessment was given. Extreme circumstances will be handled on an individual basis.
Extra Credit
No extra credit will be given in this course.

Cell Phone Use
Cell phones should remain on silent mode at all times. No routine texting, emailing or web-surfing should be done during class. If there is an emergency situation, you should step out of class to take or return any call.

Laptop Use
Laptops or tablets may be used to take notes or reference classroom reading materials, but should not be used for checking email or web surfing during class.

Participation
You are expected to be an active positive participant in class discussions and activities. Any negative, off-task or counterproductive discussions or behavior should be avoided, and will reduce your participation grade for the semester.

K. COLLEGE AND UNIVERSITY POLICIES

- **Academic Integrity (University)**
  It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior.
  See Full University Policy at [http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity](http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity)

- **Deadline for Dropping a Course with a Grade of W (University)**
  The grade of W will be assigned to any student officially dropping a course by Monday, June 29. No student is eligible to receive a W without completing the official drop process by this deadline. Visit the Office of the University Registrar for the Course Drop Form that must be submitted. After June 29, 2015 a student will not be allowed to drop the course.

- **Grade Appeals (College of Science and Engineering)**
  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 at [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.

- **Disability Services**
  Disability Services (DS) is the hub for coordinating services and accommodations to ensure accessibility and utilization of all programs for all Texas A&M University-Corpus Christi students with disabilities. Our services are designed to meet the unique educational needs of enrolled students with documented permanent or temporary disabilities. DS provides intake and consultation services to students seeking to register with our office. DS reviews an individual’s documentation of disability and assesses eligibility for services and the determination of reasonable accommodations. For more information visit the Disability Services Office at 116 Corpus Christi Hall or go to [http://disabilityservices.tamucc.edu/](http://disabilityservices.tamucc.edu/)

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.