SMTE 4382: Basic Mathematics from an Advanced Viewpoint
Course Syllabus for SMTE 4382.001, Spring 2013, CRN: 80536

I. COURSE INFORMATION
Time & Place: Mondays 7-9:30pm, CS 108
Instructor: Sarah Ives
Office Phone & address: 361.825.2151; CI-358
Email Address: Sarah.Ives@tamucc.edu
Website: faculty.tamucc.edu/~sives
Student hours: TR 2-4, W 4-5; also by appointment

II. COURSE DESCRIPTION
This is a senior capstone course for students pursuing grades 4-8 certification in mathematics. This standards-base course will include historical development of significant ideas in mathematics, interpretations of mathematical topics at multiple levels, and the use of technology to generate and convey understanding of mathematical ideas.

III. PREREQUISITES FOR THE COURSE
- MATH 3311 Linear Algebra; MATH 3312 Geometry; Completion of at least 90 hours

IV. TEXT AND OTHER SUPPLIES
Required:
- NCTM membership (can be 120 day trial membership)
- Principles and Standards for School Mathematics, NCTM, 2000 (can be accessed through online membership or purchased)
- Scientific calculator

Suggested:
- Error Patterns in Computation, 9th edition, by Ashlock, Robert & Merrill, 2006
- Teaching and Learning Middle Grades Mathematics, by Rubenstein, Beckmann & Thompson, 2004

V. STUDENT LEARNING OUTCOMES
1. Students will learn and demonstrate their knowledge and skills for items expected to be known by new mathematics teachers in grades 4-8
   - Number
   - Pattern & algebra
   - Geometry & measurement
   - Probability & statistics
2. Students will learn how mathematics curricula are based on national and state standards
3. Students will improve their own problem solving abilities in preparation for teaching problem solving skills
• Recognize that a mathematical problem can be solved in a variety of ways and may have multiple solutions (SBEC 5.7s; 5.11s) (TEKS 4.14B; 4.14C; 5.2C; 5.14B; 5.14C; 6.11C; 7.13C; 8.14C)

• Recognize that assumptions are made when solving problems and identify and evaluate those assumptions (SBEC 5.10s)

• Use mental math, estimation and number sense to problem solve and check the reasonableness of the solution(s) (TEKS 4.5A; 4.5B; 5.4; 6.2D; 6.11D; 7.2G; 7.3B; 7.9A; 8.1C; 8.5A; 8.8C)

4. Students will become familiar with models and representations

• Select and use appropriate concrete models and visual representations to demonstrate mathematical concepts and algorithms in number, algebra, geometry, and data analysis (TEKS 4.4A; 4.4B; 4.11C; 5.2D; 5.3E; 5.5B; 5.10B; 5.13C; 6.10A; 7.1C; 7.2A; 7.2C; 7.9B; 7.11A; 8.7C; 8.8A; 8.8B; 8.11C; 8.12C)

• Select and use different models to connect mathematical understanding from concrete through visual to abstract (SBEC 7.9s; 7.20s) (TEKS 7.2A; 7.2C; 7.5A; 7.12k)

• Communicate mathematical ideas using verbal, numerical, graphical, algebraic, geometric, and symbolic representation (SBEC 2.4k; 3.8k; 5.15s) (TEKS 4.15A; 5.15A; 6.12A; 6.12B; 7.14A; 7.14B; 8.15A; 8.15B)

5. Students will use manipulatives and technology to teach and learn mathematics

• Know and understand how learning may be assisted through the use of mathematics manipulatives (SBEC 7.7k)

• Know how to choose and use age-appropriate mathematical manipulatives to develop and explore mathematical concepts and ideas and promote abstract understanding (SBEC 5.7k; 7.20s) (TEKS 4.14D; 5.14D; 6.11D; 7.13D; 8.14D)

• Know and understand how learning may be assisted through the use of technological tools (SBEC 7.7k)

• Know how to choose and use age-appropriate technology to develop, explore, and record mathematical concepts and ideas (SBEC 5.7k) (TEKS 4.14D; 4.15A; 5.14D; 5.15A; 6.11D; 7.13D; 8.12C; 8.14D)

6. Students will learn to connect grade 4-8 level mathematics to the mathematics they have recently learned in college courses

• Use calculus concepts to answer questions about rates of change, area/volume, and properties of functions and their graphs (SBEC 2.14s; 2.15s; 2.16s; 3.15s) (TEKS 6.2C; 6.4A; 7.2D; 7.4C; 8.2D; 8.3B; 8.5B; 8.10A; 8.10B)

• Understand concepts and measures of central tendency, dispersion, percentiles, and quartiles and how they describe a set of data (SBEC 4.11s; 4.12s) (TEKS 5.13B; 6.10B; 7.11B; 7.12A; 7.12B; 8.12A)

7. Students will be exposed to professional organizations and publications in order to maintain/continue their lifelong learning as a middle school mathematics teacher

• Know and understand how students’ prior knowledge, experiences and attitudes towards mathematics may affect their learning (SBEC 7.4k)

• Know and understand common mathematical misconceptions and errors (SBEC 1.19s; 7.6k; 8.8k)
Discuss with colleagues the current ideas, trends, research, and directions that mathematics education is taking (SBEC 6.7k; 9.4k) (TEKS 8.13B)

Know and understand the value of joining and actively participating in the professional community of mathematics educators through professional organization, professional publications and electronic communities (SBEC 9.3k; 9.4k; 9.5s)

VI. INSTRUCTIONAL METHODS AND ACTIVITIES
The class uses a combination of lectures, pre- and post-tests, teaching projects, individual and group work, and a final project. Students are expected to participate in assigned teaching projects, group and whole class discussions and activities, and to contribute their knowledge and thoughtful evaluation of the contribution of others.

VII. EVALUATION AND ASSESSMENT

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<th>Component</th>
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<tr>
<td>Homework</td>
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<tr>
<td>Class Projects</td>
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<td>Family Math Night project (15%)</td>
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<td>Teaching project (15%)</td>
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<td>Group project (15%)</td>
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<tr>
<td>TExES Post-test</td>
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<table>
<thead>
<tr>
<th>Percentage Range</th>
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<td>80-89%</td>
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<td>below 60%</td>
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VIII. TENTATIVE COURSE SCHEDULE
See course calendar at [http://faculty.tamucc.edu/sives/calendar-spring-2013/](http://faculty.tamucc.edu/sives/calendar-spring-2013/)

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](http://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.