SMTE 4382: Basic Mathematics from an Advanced Viewpoint  
Department of Mathematics and Statistics  
Spring 2020

A. COURSE INFORMATION  
Course number/section: SMTE 4382.001  
Class meeting time: M 7:00 – 9:30 PM  
Class location: CS-107  
Course Website: https://bb9.tamucc.edu

B. INSTRUCTOR INFORMATION  
Instructor: Dr. James Dogbey  
Office location: CI 304  
Office hours: MWF 12:00noon- 1:50pm or by appointment  
Telephone: 361-825-3159  
E-mail: James.Dogbey@tamucc.edu  
Appointments: Feel free to make an appointment with me via email if you are unable to attend my regularly scheduled office hours. I’m here to help.

C. COURSE DESCRIPTION  
This is a senior capstone course for students pursuing grades 4-8 certification in mathematics. This standards-based 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.

D. PREREQUISITES AND COREQUISITES  
MATH 2305; MATH 3312 Geometry; Completion of at least 90 hours

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES  
Required  
• Scientific calculator

Optional Textbook(s) or Other References  
The following Articles are posted on Blackboard:


**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.

After completing the course, students should be able to:

1. Describe the historical development of mathematical topics and the contribution of notable mathematicians.
2. Describe some of the historical and cultural influences on the development of mathematics, to include non-Western cultures.
3. Investigate topics in the history of mathematics and be able to differentiate between reliable and unreliable sources and communicate the results in oral and written reports.
4. Do mathematics in the manner of our predecessors, and in doing so develop recognition for the advantages and necessity for present day methods and notation.
5. Characterize some significant periods and trends of mathematics education in the United States, as well as identify different issues and forces that influence current mathematics curriculum reform in the United States.
6. Choose and use age-appropriate mathematical manipulative materials to develop and explore mathematical concepts and ideas and promote abstract understanding.
7. Discuss with their colleagues the current ideas, trends, research, and directions that mathematics education is taking in the United States.
G. **INSTRUCTIONAL METHODS AND ACTIVITIES**
Instruction will take place in large, and small group formats. Among strategies employed are: discussion; mathematical problem solving; hands-on exploration with manipulative materials; exploration with instructional technologies, cooperative groups learning strategies; lesson modeling and demonstration; reading and reflection; and analysis of curricular resources.

H. **MAJOR COURSE REQUIREMENTS AND GRADING**

- Informal and formative assessment will be employed. The informal assessment includes observation of class activities, discussion and participation; questioning; and student feedback. Formal and summative assessment will include individual and group papers and projects, reflective writing, and creation and implementation of lesson plans.

- Specifically, your final course standing will be based upon attendance and participation, homework and reading reflections, three projects, and final project presentation. The three projects will focus on: designing a math lesson with your choice of Manipulative, designing a technology activity (math) with your choice of technology, and developing a historical report on a particular topic in school mathematics (more details on these projects will be provided in class).

- The point distributions for your final grade are as follows:
  
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Percentage of Grade</th>
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<tbody>
<tr>
<td>Attendance and Participation</td>
<td>10% of grade</td>
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<tr>
<td>Homework and Reflection</td>
<td>50% of grade</td>
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<tr>
<td>Family Math Night</td>
<td>10% of grade</td>
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<tr>
<td>History of Math Project</td>
<td>20% of grade</td>
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<tr>
<td>Final Project Presentation</td>
<td>10% of grade</td>
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Final grades will be assigned as follows:

- 90% - 100% = A
- 80% - 89.9% = B
- 70% - 79.9% = C
- 60% - 69.9% = D
- Below 60% = F
# I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>Date</th>
<th>Lesson</th>
<th>Topic &amp; Chapter Activities</th>
<th>Readings &amp; Assignments Due</th>
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</thead>
<tbody>
<tr>
<td>01/20</td>
<td>1</td>
<td>MLK Holiday</td>
<td>No Class</td>
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<tr>
<td>01/27</td>
<td>2</td>
<td>Course Introduction, Egypt and Mesopotamia Mathematics (Briefly)</td>
<td>Syllabus</td>
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<td>Problem Set (N&amp;O): to be completed in classroom</td>
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<tr>
<td>02/03</td>
<td>3</td>
<td>Egypt and Mesopotamia Mathematics with Videos</td>
<td>Read: B&amp;G pp. 1 - 14</td>
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<td>Problem Set (N&amp;O) - Primes Nav. 9-12, What is N&amp;O?</td>
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<tr>
<td>02/10</td>
<td>4</td>
<td>Greek mathematics, Mathematics of medieval Europe, Ancient India and Arabia with videos</td>
<td>Read: B&amp;G pp. 14 - 32</td>
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<td>Sketch 1, do #1 and #2 due</td>
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<td>Problem Set (Algebra) - Houses, toothpicks, Nav 6-8, Pledge Drive</td>
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<td></td>
<td>What Algebra is?</td>
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<td>Sketch 7, do #1; Sketch 9, do #1</td>
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<td></td>
<td>Problem Set (S&amp;P) - Lab 1351</td>
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<td>What is Statistics &amp; Probability?</td>
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<tr>
<td>02/24</td>
<td>6</td>
<td>History of Mathematics education in the USA, Mathematics Education Reform in the 21st Century USA</td>
<td>Read: Ball (2003)</td>
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<td>Do: Will It Always Be Prime?</td>
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<td>Start Discussing Content Exams</td>
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<tr>
<td>03/02</td>
<td>7</td>
<td>Doing and Learning Math Today Teaching Math Through Problem Solving</td>
<td>Read: Frank (1989)</td>
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<td><strong>Spring Break</strong></td>
<td><strong>Spring Break</strong></td>
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<td>03/16</td>
<td>8</td>
<td>Math Talk: Engaging Students in Mathematical Discourse</td>
<td>Read: Ball (1992)</td>
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<td>Facilitating Cooperative Groups Learning in math classrooms</td>
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<tr>
<td>03/23</td>
<td>9</td>
<td>Big Ideas in Middle Grades Algebra</td>
<td>Navigating through Middle School Algebra</td>
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<tr>
<td>03/30</td>
<td>10</td>
<td>Big Ideas in Middle Grades Data Analysis and Probability</td>
<td>Navigating through Middle School Data Analysis and Probability</td>
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<tr>
<td>04/06</td>
<td>11</td>
<td>Big Ideas in Middle Grades Geometry and Measurement</td>
<td>Navigating through Middle School Geometry and Measurement</td>
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<tr>
<td>04/13</td>
<td>12</td>
<td>Teaching math with Tangram Pieces &amp; Pattern Blocks</td>
<td><strong>Do: Pattern Block Investigation</strong></td>
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<tr>
<td>04/20</td>
<td>13</td>
<td>Teaching math with Two Color Counters, Algebra Tiles, Teaching</td>
<td><strong>Do: Sum of Divisors</strong></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 be regular and punctual in your class attendance. You are responsible for all notes, assignments and announcements made in class. *Students who have more than 4 absences without proper documentation may have their grades affected. Specifically, After your first 4 absences (excused or otherwise), each additional absence will reduce your final grade by 1% point.*

**Late Work and Make-up Exams**
Late work and Make-up Exams are only tolerated under reasonable circumstances with proper documentations.

**Extra Credit:** None

**Cell Phone Use**
There is a zero-tolerance policy for texting or any other cell phone use in class. Cell phones may be left on vibrate for emergency notification purposes. If you expect an important phone call, please inform me before class and quietly excuse yourself when you receive it. For every instance of texting or other cell phone use that the instructor observes during lecture, 2% will be deducted from the final grade.

**Laptop Use**
Laptops, I-Pads, Kindles, and other electronic devices must be turned off and put away during class. In fact, don’t even use your laptop for taking notes. Once your laptop is on, it becomes too tempting to try to multitask. The only electronic device you can use in this
classroom is a calculator — a real calculator, not a cell phone that doubles as a calculator. For every instance of electronic use that the instructor observes during lectures, 2% will be deducted from the final grade.

**Food in Class:** There will be no eating during class time.

**Missed Exam**
Students who miss Exams and have a documented excuse for that absence (doctor's note, pre-arranged athletic department absence, etc.) will be given the opportunity to make up that Exam. Upon your return to class you are required to present your documentation to me and we arrange to make up your exam.

**Participation**
An important aspect of learning to teach is, in part, a function of being a member of a community of learners that interacts to build knowledge about teaching and children’s learning. Another important aspect of learning to teach is engagement and collaborative work. Effective teachers are committed to professional growth through participation and collaboration to improve their practice. You are, therefore, expected to actively participate in class, as this course is designed to draw upon the experiences and insights of your peers and your participation makes for a richer experience for all. Simply attending class does not constitute participation.

**K. COLLEGE AND UNIVERSITY POLICIES**

- **Academic Integrity (University)**
  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 failing grade.

- **Classroom/Professional 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.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the
population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  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 your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. 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. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a 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, and the College of Science and Engineering Grade Appeals webpage at 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**
  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 (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

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.

http://disabilityservices.tamucc.edu/

• **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. **OTHER INFORMATION**

• **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**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.