I. **Course Information**

- **Instructor:** Dr. James Dogbey
- **Meeting Time:** MW 7:00 – 8:15 PM CS-107
- **Office Phone:** 361 825 3159
- **Office Address:** CI 304
- **E-MAIL Address:** James.Dogbey@tamucc.edu
- **Office Hours:** MW 11:30- 1:30 & 5:00 – 6:30 PM or 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. **PREREQUISITE**

- MATH 3311 Linear Algebra; MATH 3312 Geometry; Completion of at least 90 hours

IV. **Text and other supplies required**

**Required:**
- NCTM membership (can be 120 day trial membership)
- Scientific calculator

**Supplementary:** *The following Articles are posted on BlackBoard:*


**Optional Textbook**


**V. Learning Objectives**

After completing the course, students should be able to:

• Describe the historical development of mathematical topics and the contribution of notable mathematicians.
• Describe some of the historical and cultural influences on the development of mathematics, to include non-Western cultures.
• 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.
• 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.
• Characterize some significant periods and trends of mathematics education in the United States.
• Identify different issues and forces that influence current mathematics curriculum reform in the United States.
• Choose and use age-appropriate mathematical manipulatives to develop and explore mathematical concepts and ideas and promote abstract understanding.
• Choose and use age-appropriate technology to develop, explore, and record mathematical concepts and ideas.
• Discuss with their colleagues the current ideas, trends, research, and directions that mathematics education is taking in the United States.

**VI. 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.

VII. Evaluation and Grade Assignment

• 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 Manipulatives, 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:
  
  Attendance and Participation = 10% of grade
  Homework and Reflection = 45% of grade
  3 Projects = 30% of grade
  Final Project Presentation = 15% of grade

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

VIII. Tentative Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Lesson</th>
<th>Topic &amp; Chapter Activities</th>
<th>Readings &amp; Assignments Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/27</td>
<td>1</td>
<td>Course Introduction</td>
<td>Syllabus</td>
</tr>
<tr>
<td>9/1</td>
<td>Closed</td>
<td>Labor Day Holiday</td>
<td></td>
</tr>
<tr>
<td>9/3</td>
<td>3</td>
<td>Egypt and Mesopotamia</td>
<td>Read: B&amp;G pp. 1-14, Sketch 1, do #1 and #2 Sketch 9, do #1</td>
</tr>
<tr>
<td>9/8</td>
<td>4</td>
<td>Greek mathematics</td>
<td>Read: B&amp;G pp. 14-24,</td>
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<tr>
<td>Date</td>
<td>Week</td>
<td>Topic</td>
<td>Reading/Activity</td>
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<tr>
<td>9/10</td>
<td>5</td>
<td>Mathematics of ancient India and Arabia</td>
<td>Sketch 7, <strong>do #1</strong> Sketch 5, <strong>do Project 1 &amp; 2</strong></td>
</tr>
<tr>
<td>9/17</td>
<td>7</td>
<td>Mathematics of the 15-17th Century</td>
<td>B&amp;G pp. 24-32. <strong>do: Will It Always Be Prime?</strong></td>
</tr>
<tr>
<td>9/24</td>
<td>9</td>
<td>Calculus and applied mathematics</td>
<td>B&amp;G pp. 42-47. <strong>Do: Sum of Divisors</strong></td>
</tr>
<tr>
<td>10/1</td>
<td>11</td>
<td>From the New Math to the <em>Agenda for Action</em></td>
<td>Read: Fey &amp; Graeber (2003)</td>
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<tr>
<td>10/6</td>
<td>12</td>
<td>Mathematics Reform in NCTM Era</td>
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<tr>
<td>10/15</td>
<td>15</td>
<td>Math Talk: Engaging Students in Mathematical Discourse</td>
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<tr>
<td>10/20</td>
<td>16</td>
<td>Facilitating Cooperative Groups Learning in mathematics classrooms</td>
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<tr>
<td>10/22</td>
<td>17</td>
<td>Use of manipulative materials in Elementary and Middle School Mathematics</td>
<td>Read: Ball (1992)</td>
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<tr>
<td>10/27</td>
<td>18</td>
<td>Teaching math with Tangram Pieces</td>
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<tr>
<td>10/29</td>
<td>19</td>
<td>Teaching math with Pattern Blocks &amp; Fraction Circle</td>
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</tr>
<tr>
<td>11/3</td>
<td>20</td>
<td>Teaching math with Cuisenaire Rods &amp; Fraction Tower</td>
<td>History of Mathematics Project Due</td>
</tr>
<tr>
<td>11/5</td>
<td>21</td>
<td>Teaching math with Two Color Counters</td>
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<tr>
<td>11/10</td>
<td>22</td>
<td>Teaching math with Base Ten Blocks</td>
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<tr>
<td>11/12</td>
<td>23</td>
<td>The Emergence of Technology in Mathematics Education</td>
<td>Read: Kelly (2003)</td>
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<tr>
<td>11/17</td>
<td>24</td>
<td>Mobile devices &amp; calculators</td>
<td>Investigate how these technologies enhance teaching and learning of Math</td>
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IX. Class Attendance and Policy

- Learning is a social process, maximized by active engagement, participation, and discussion. Thus, students are expected to attend every class and be an active participant in the classroom practices. In the event of an absence, students are expected to contact the instructor, arrange for a classmate to pick up any handouts, and turn in any work that is due. Absent students are responsible for any work announced in class and for all announced changes, additions, and deletions to the syllabus. Absence from class is not a valid excuse for failing to meet deadlines or fulfill course requirements.

X. Legal Statements

Academic Integrity/Plagiarism

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 grade of 0% on that assignment or test.

A grade of incomplete will only be given in exceptional circumstances, such as a death in the family or personal injury that might prevent someone from taking the final exam. (Please notice that an incomplete grade can only be given to students that are passing the course but have not completed the required work for reasons beyond the students’ control). In this case, it is the responsibility of the student to notify me as soon as possible, preferably by email, and to fill the required "Incomplete Form" available from the University Registrar. If this is not done, a score of 0% will be assigned for any incomplete exams and a final grade will be computed using the criteria described above.

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. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Friday November 7th is the last day to drop a class with an automatic grade of “W” this term. I cannot personally assign a grade of W.

**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.

**Grade Appeals**

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 (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.

**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, rm. 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.
**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.

**XI. Syllabus Disclaimer**

This syllabus has been created as a guide to the class and is as accurate as possible. However, all information is subject to change. Any changes will be posted on the Blackboard Learning System’s Announcements.