I. **Course Description:**

The emphasis in this course is on interdisciplinary connections among mathematics, science, and communication and also on the application of subject-area knowledge to the world of work. Attention goes to relevant research, particularly research addressing effective innovations in teaching and learning.

II. **Rationale:**

This course provides the conceptual framework for understanding and applying the theories of student-centered and problem-based teaching and learning. This course is designed to emphasize the choosing, designing, implementing and assessing of mathematics and science tasks based on collaborative use of complex questions, manipulatives, technology, discourse, justification, and reflection. Participants are expected to apply student-centered and problem-based learning in their own classroom and report back to the class.

This course is designed for graduate students who want to enhance and expand their understanding of current methods in math and science education. The course is offered in conjunction with the 15th annual ME by the SEa Conference.

III. **State Adopted Proficiencies for Teachers**

Learner-Centered Knowledge: The teacher possesses and draws on a rich knowledge base of content, pedagogy, and technology to provide relevant and meaningful learning experiences for all students.

Learner-Centered Instruction: To create a learner-centered community, the teacher collaboratively identifies needs; and plans, implements and assesses instruction using technology and other resources.

Equity in Excellence for all Learners: The teacher responds appropriately to diverse groups of learners.

Learner-Centered Communication: While acting as an advocate for all students and the school, the teacher demonstrates effective professional and interpersonal communication skills.

Learner-Centered Professional Development: The teacher, as a reflective practitioner dedicated to all students’ success, demonstrates a commitment to learn, to improve the profession, and to maintain professional ethics and personal integrity.
IV. TExES Competencies

This course is designed for teachers who are already certified. TExES competencies, although expanded upon within this course, are not identified since the participating teachers will have already completed their examinations.

V. Course Objectives and Outcomes

• The mathematics/science teacher will show an increased understanding of problem-centered and student-centered learning through the design of appropriate tasks for his/her students
• The mathematics/science teacher will include complex questions, manipulatives, technology, discourse, justification, and reflection in the design of the task.
• The student will read peer-reviewed, scholarly articles on current trends and issues in math/science education and will participate in online class discussions.
• The student will attend ME by the SEa and evaluate four sessions.
• The student will write a reflection paper based on how they will plan to change a current lesson and present that lesson.

VI. Course Topics
What is problem based learning?
Problem posing and assessing tasks

VII. Instructional Methods and Activities

Traditional experiences (reading assignments, written assignments, on line discussion)
BlackBoard assignments and interaction, conference attendance

VIII. Evaluation and Grade Assignment

The methods of evaluation and the criteria for grade assignment are:

1. **Article reflections** (25%) - You will be reading articles from a national peer reviewed journal. After reading each article and reflecting upon its important issues it addresses, you will write a 2 or 3 sentence summary and 3-5 bullets reflecting what you want to remember from this article that you think are important, or it may be things you want to do back in the classroom. You also need to include your “Personal Connection” to the article.

2. **Discussion Board** (20%) - You will be a part of the learning community by responding to articles on the discussion board. The promptness and initiative of participating in threaded discussions done in a timely fashion will demonstrate self-motivation. The delivery of your posts will address your attention to detail in terms
of being grammatically correct with rare misspellings. You will make posts that are relevant to the original discussion by staying on topic. By contributing to the Learning Community (LC), you will demonstrate an effort to further the development of a collaborative learning experience. You will write a one-paragraph reflection that pertains to the article. Then you will review two other students’ postings and post one response/comment to each student's post (Total of two replies). You can feel free to provide/post responses to more than two classmates' posts to enhance a discussion; however, you will only receive credit for replying to two classmates' posts. Remember to be courteous and respectful to all peers and in your responses to postings. Professionalism is expected at ALL times.

3. **Conference Attendance (20%)**: Students must attend the 15th Annual ME by the SEa Conference, June 14, 2019. Conference reaction papers: Students must complete four written 4 one-page reaction papers reflecting their engagement with and evaluation of one keynote address and three regular conference sessions.

3. **Instructional Strategies Self-Study (20%)**
   Students will select a specific grade and subject (math or science) for study. Students will analyze their current classroom practices as they relate to the research-based instructional approaches discussed in the course. They will develop a plan that would implement changes that would be appropriate, responsible, and effective for their math or science concept. Students will share their final reports + teach their newly developed lesson in person.

4. **Participation- 15%** See Class Attendance Policy.

   **Grading: EDCI 5325**
   - Articles 25
   - Discussion board 20
   - Conference reaction reports 20
   - Instructional Strategies Self-Study 20
   - Participation 15

   **TOTAL** 100

   **Grading Scale**
   - 92-100% = A
   - 84-91% = B
   - 75-83% = C
   - 67-74% = D
   - below 67% = F

   A. A tentative course schedule:
   - Article reviews: June 5 – June 23
   - Monday, June 5 or 7, 2:00-3:55 ECDC 219B, Welcome/Intro. to Course
   - Discussion Board, June 3 -June 20
   - Friday, June 14, ME by the SEa, 8:30am – 4:00pm, Center for Instruction
   - Lesson presentations, June 24 & 27
   - Instructional Strategies Self-Study Lesson Plan + Reflection paper due July 3
IX. Course Policies:
- Participate cooperatively in class discussions & lessons being taught by classmates.
- Word-process all assignments (1 inch margins, 12 point font, Times New Roman). Written work should be clear, concise, and written in an academic manner. The Writing Center is available for help with written assignments.
- Additional assignments may be required if they will benefit the course objectives.
- Assignments and due dates may be modified at the discretion of the instructor if they will benefit/enhance the outcomes of the course.
- Be responsible for any information and materials missed when absent.
- Points may be deducted for late work at the discretion of the professor.
- No incomplete grades will be given.
- All students are expected to participate fully in class discussions, presentations, and group work. Failure to participate will affect your grade.

Class Attendance Policy:
Regular attendance is expected at all classes. There is a high positive correlation between consistent, punctual attendance and higher course grades. It is virtually impossible to receive an A in the course if there are absences and/or lateness.

X. Textbook(s) Recommended, (I have copies to loan you if you are math).
Elementary and Middle School Mathematics: Teaching Developmentally, Enhanced Pearson eText with Loose-Leaf Version -- Access Card Package, 9/e Van de Walle, Karp & Bay-Williams, or previous editions on loan from professor

XI. Bibliography

The knowledge bases that support course content and procedures include:


http://www.corestandards.org/


Additional Policies

*Cell Phone/Electronic Device Usage*
Cell phones and other electronic devices should not be used during class. If a potential emergency exists where a student is expecting an important call concerning a child or family member, the phone should be put on vibrate.

*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 level of discipline appropriate to the misconduct. This may include a requirement to re-do work in question; requirement to submit additional work; lowering of grade on work in question; assigning grade of ‘F’ to work in question; assigning grade of ‘F’ for course; recommendation for more severe punishment, such as suspension or dismissal from the University. The procedure for Academic Misconduct cases is posted on BlackBoard.

Learning and teaching take place in an atmosphere of intellectual freedom and openness. All members of the academic community are responsible for supporting freedom and openness through rigorous personal standards of honesty and fairness. Plagiarism and other forms of academic dishonesty undermine the very purpose of the university and diminish the value of an education. Plagiarism is wholly unacceptable and, for the purposes of this course, is defined as using in part or in whole any material written or designed by someone other than the student, unless specific credit is given to the person or resource material used. This includes, but is not limited to: lesson plans found on the Internet and/or provided by classroom teachers, or found in any form of publication (e.g., books,
magazines, Internet sites), book descriptions/reviews, course work done by previous students (or any other current or TAMU-CC student). Appropriate citation of resources is required.

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.

Preferred methods of scholarly citations

XII. Grade Appeals*
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 http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

XIII. 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.
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.

XIV. 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.