I. COURSE INFORMATION
Meeting time & place: Wed. 7-9:30pm; Center for Sciences 107
Instructor: Sarah Ives
E-mail: Sarah.Ives@tamucc.edu
Webpage: http://sci.tamucc.edu/~sives/
Office: Center for Instruction 358
Office hours: Tues., Wed., & Thurs. 3-5pm, and by appointment
Phone: (361) 825.2151

II. COURSE DESCRIPTION
This course focuses on the conceptual foundation of linear algebra, including matrix operations, systems of linear equations, vector spaces, and transformations. Special consideration is given to connections between linear algebra and geometry, calculus, numbers and operations, probability and statistics, and computational mathematics. This course is intended for inservice secondary mathematics teachers and may not be used for graduate credit toward the MS degree in mathematics.

III. PREREQUISITES
Graduate status; mathematical preparation through Calculus 1; practicing middle school mathematics teacher or permission of instructor.

IV. TEXTS & OTHER SUPPLIES
• Introduction to Linear Algebra, 4th Ed., Strang, G., 2009
• Principles & Standards for School Mathematics, NCTM, 2000
• Texas Essential Knowledge and Skills, TEA, 2009
• Career and College Readiness Standards, THECB, 2008
• Graphing calculator (TI preferred)

V. STUDENT LEARNING OUTCOMES
Students in the class will:
• Recognize and solve finite systems of linear equations using multiple methods.
• Be able to represent real-world information in matrices and read such information from matrices.
• Develop proficiency in the symbolic manipulation of matrices, including addition, multiplication, inverses, transposition, and exponents.
• Use matrices to investigate and solve applied problems in the physical sciences, life sciences, and social sciences.
• Explore connections between the conceptual foundations of linear algebra and secondary mathematics content.
• Use technology to model mathematical scenarios using matrices and interpret results of numerical computations.
VI. ASSESSMENT & EVALUATION

This course will emphasize learning through problem solving and use a combination of direct instruction, in-class small and large group discussion, technology-enriched instruction and homework, and individual and group assessments.

Students are expected to:
- Participate in lecture and group discussions by contributing knowledge and being receptive of new knowledge. Group discussions will be conducted in class as well as through threaded online discussions.
- Use appropriate resources to research applications and connections of course content with secondary content and applications in sciences.
- Conduct individual and group research via posted homework and group projects.

The instructor will evaluate student performance by using the following criteria:
- Participation & homework 30%
- Group Assignments & projects 30%
- Assessments & final project 40%

A 90% - 100%
B 80% - 89%
C 70% - 79%
F < 70%

Individual Practice: Certain problems and investigations will be assigned for individual work and reflection. Timely completion of assignments is expected in order to keep up with the course content. Preliminary reading before coming to class is expected.

Projects: An ongoing course project will serve as an umbrella for discussing the mathematics content. This is mainly a group effort that will be accomplished via threaded online discussions.

Assessments: There will be three assessments (tests). The first two assessments will have an in class portion and a take home portion. The in-class portion will consist of conceptual ideas that are to be assessed in a timed setting. The take-home portion will require more thought and research, and is associated to the teaching scenario. Both components are expected to be turned in at the due time. The third assessment is the course post-test and the final group presentation.

VII. TENTATIVE COURSE SCHEDULE

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<th>Day</th>
<th>Topics</th>
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| 1   | Pre-test  
     | Introduction to Vectors  
     | Vectors and Geometry |
| 2   | Solving Linear Equations by Elimination  
     | Systems of Equations and Statistics |
| 3   | Matrix Operations  
     | Exponents of Matrices and Modeling in the Life Sciences |
| 4   | Invertibility and Matrix Algebra  
     | Matrix Solutions of Linear Equations |
| 5   | Assessment #1 |
VIII. CLASS POLICIES

Attendance: Since this course meets only once a week, you are expected to attend every class session. If you find that you need to miss part or all of a class session, please contact me via email (Sarah.Ives@tamucc.edu) or phone (825-2151) before class or as soon as possible.

Late Assignments: Homework will be due at the beginning of class and may be submitted later if arrangements have been made with the instructor prior to the deadline. Late homework will be accepted at the discretion of the instructor.

Personal Electronic Devices: Please silence phones during class and step out of class to use any PEDs. You may not use any PED during individual assessments.

Written Work: Good writing skills are important in this class. Please type and proofread your written assignments. The Writing Center is available for help with written assignments.

In-Class Discussion: This course will include discussion of educational topics that sometimes reveal passionate views. Everyone in class is encouraged to express their views with an emphasis on evidence-based claims. Through maintaining a spirit of mutual respect and acknowledgement, the hope is that classroom discussion will be inviting, lively, and informative.

IX. 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 Nov. 4th is the last day to drop a class with an automatic grade of “W” this term.

X. ACADEMIC HONESTY
Academic Honesty: 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, forgery or plagiarism.

XI. 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 reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Disability Services Office at (361) 825-5816 or go to the office at Driftwood 101. 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.

XII. 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 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.