Syllabus:  Math 3301
Linear Algebra
Fall,  2017

Instructor Information
Dr. Andrew J. Siefker
Office:  MCS 219B
Phone:  486 - 5440 (office)
Email:  andrew.siefker@angelo.edu
Office Hours:  M:  10:00 – 11:00 a.m.;  2:00 – 4:00 p.m.
              T:  9:00 – 10:00 a.m.
              W:  10:00 – 11:00 a.m.;  2:00 – 4:00 p.m.
              Th:  9:00 – 10:00 a.m.;  3:30 – 4:30 p.m.
              F:  10:00 – 11:00 a.m.

Or by appointment

Major Course Requirements
Text:  *Linear Algebra and Its Applications*, 5th ed; by David C. Lay, Steven Lay, Judi McDonald.
Prereqs:  Mathematics 2331
Grading:  • Exams .......................... 3 exams: 25%, 23%, 17% (best to worst).
          • Homework and Quizzes ................. 10% (late work not accepted).
          • Final ............................................. 25% (Tuesday, Dec 12 at 1:00 pm).

Note:  I reserve the right to adjust the grading scheme and grading scale for an individual or the class as warranted. Please note that ASU’s interpretation of federal law (Buckley amendment) prohibits me from relaying your grades via phone or email.

Math Lab:  Located on 3rd Floor of Library in C302
          MTWR:  9 am – 8 pm
          F:  9 am – 12 pm
          Su:  4 pm – 8 pm (Starting 9-10-2017)
          Or online at Blackboard/SMART Online

Attendance:  Attendance will be taken but does not count towards your final grade.

Disclaimer
This syllabus is current and accurate as of its posting date, but will not be updated. For the most complete and up-to-date course information, contact the instructor. Also, the subject matter schedule listed below is tentative, and subject to change and adaptation. For current, updated information about course topics, contact the instructor.
Course Policies:

Homework and Quizzes:
Homework is regularly collected and quizzes may be administered. When collected, homework is due when the instructor requests it (usually at the beginning of class.) Late, but timely, homework is accepted for correction, but receives a grade of ZERO. When given, quizzes count as a homework score and NO MAKE-UP QUIZZES will be given. You must show complete solutions (i.e. all steps and calculations) and write LEGIBLY to receive credit for any problem.

Examinations:
You must show complete solutions (i.e. all steps and calculations) and write LEGIBLY to receive credit for any "essay" problem. Scrap paper will be provided upon request; you may not use your own. If you miss or will miss an exam, contact the instructor ASAP. NO MAKE-UP EXAMS will be administered, and the use of calculators is at the discretion of the professor.

Grades:
All grades become final one week after the grade is recorded. Therefore, any questions you may have regarding a grade must be resolved before this one week deadline.

Class Etiquette:
Please be courteous of others in the class including: not utilizing cell phones, silencing cell phones, not habitually arriving late, not leaving during lectures (unless you notify me beforehand), not engaging in non-math related conversations or activities, etc.

Student Disability Services
ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA), and subsequent legislation.

The Office of Student Affairs is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability, and it is the student’s responsibility to initiate such a request by contacting.

Ms. Dallas A. Swafford, Director of Student Disability Services
325-942-2047
dallas.swafford@angelo.edu
Houston Harte University Center

Title IX
Angelo State University is committed to the safety and security of all students. If you or someone you know experience sexual harassment, sexual assault, domestic or dating violence, stalking, or discrimination, you may contact ASU’s Title IX Coordinator:

Michelle Nicole Boone, Director of Title IX Compliance
325-486-6357
michelle.boone@angelo.edu
Houston Harte University Center
**Student Absence for Observance of Religious Holy Days**

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 Student Absence for Observance of Religious Holy Day for more information.

**Incomplete Grade Policy**

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 Grading Procedures for more information.

**Academic Integrity**

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU. The College of Science and Engineering adheres to the Statement of Academic Integrity.

**Plagiarism**

Plagiarism is a serious topic covered in ASU’s Academic Integrity policy in the Student Handbook. Plagiarism is the action or practice of taking someone else’s work, idea, etc., and passing it off as one’s own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality via Turnitin. Resources to help you understand this policy better are available at the ASU Writing Center.

**Copyright Policy**

Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

**General Policies Related to this Course:**

All students are required to follow the policies and procedures presented in these documents:

- Angelo State University Student Handbook
- Angelo State University Catalog
**Student Responsibilities:**

1. Students are responsible for the policies and procedures delineated in this syllabus. Failure to abide by these policies and procedures may result in failing the course.
2. If you miss class for any reason, even for University-sponsored activities, it is your responsibility to have your assignments submitted on time or ahead of time if necessary. You are also responsible for preparing for the next class. This includes obtaining assignments, announcements, and notes FROM A CLASSMATE.
3. The main keys to success in this course are as follows:
   a. Attending class regularly.
   b. Reading the book and working through the examples.
   c. Taking good notes.
   d. Completing all assignments in a timely manner.
   e. Not falling behind.
   f. Reviewing the material on a regular basis. Studying for this course at least 6 hours per week (more if needed) is what is recommended by learning researchers and is what I expect of you. AT LEAST SEVENTY-FIVE PERCENT OF YOUR LEARNING IS SELF-STUDY.

**Some Things to Consider About College Mathematics Courses:**

1. **Responsibility** – Though guided by your instructors and advisors, YOU are responsible from now on for your own education. SEVENTY-FIVE PERCENT OF YOUR LEARNING IS SELF-STUDY.
2. **Peer Group** – Most of you are no longer well above the majority of your classmates. You are in a new environment with people whose abilities are much like your own.
3. **Level of Learning** – The primary goals of a university education are three-fold:
   1) to learn essential thinking skills so that when you encounter a new or unfamiliar situation you can analyze the problem and carry out the necessary steps to solve it. This is especially important in mathematics since many courses require a mathematical background and expect you to use the material you have studied. 2) to learn how to learn on your own, i.e. how to teach yourself through reading, study, discussion, and contemplation. 3) to develop an appreciation for topics not directly related to employment. Students who do poorly in college mathematics courses are typically those who fall behind in their work, overestimate their effort, or insist on high-schoolish modes of learning.
4. **Roles of Students and Instructors** – The instructor’s role is to guide the students’ learning process. It is not to cover all aspects of every topic for every student. Students are expected to read the textbook, to learn some material on their own, and to fill in any gaps in their mathematical background. It is not uncommon in college mathematics courses that MUCH OF YOUR LEARNING WILL TAKE PLACE OUTSIDE THE CLASSROOM. You should plan to devote at least two hours outside the classroom for every hour of classroom instruction. Teaching and learning in college is a cooperative effort shared by the instructor and the student.
5. **Exams** – Class work and homework are intended to guide you in your task of gaining command of the material covered in this course. This DOES NOT MEAN that the examples you see will be exactly (or essentially) the same as the questions asked on exams. You are expected to prepare yourself for tests and the final exam. If you UNDERSTAND THE MATERIAL to the point where you can apply it to pertinent situations, you will do well on exams. If you concentrate on memorization and ad-hoc methods for particular problems, you will probably struggle on exams. There will be no review sessions or elaborate practice sheets to prep you for a test or final exam.
Student Learning Outcomes

1. **Students will demonstrate factual knowledge including the mathematical notation and terminology used in this course.** Students will learn the vocabulary, symbolism and basic definitions used in linear algebra, including vectors, matrices, vector spaces, subspaces, linear independence, span, basis, dimension, linear transformation, inner product, eigenvalue and eigenvector.

2. **Students will describe the fundamental principles including the laws and theorems arising from concepts covered in this course.** Students will become familiar with the theorems about and the characteristics of linear spaces and linear transformations. Students will determine bases, compute dimensions, evaluate linear transformations, solve systems of linear equations and find determinants.

3. **Students will apply course material along with procedures and techniques covered in this course to solve problems.** Students will apply properties and theorems about linear spaces to specific mathematical structures that satisfy the linear space axioms.

4. **Students will develop specific skills, competencies, and thought processes sufficient to support further study or work in this field or related fields.** Students will acquire a level of proficiency in the fundamental concepts and applications necessary for further study in academic areas requiring linear algebra as a prerequisite or for work in occupational fields requiring a background in linear algebra. These fields might include the physical sciences and engineering as well as mathematics.

Course Content

**Textbook:** *Linear Algebra and Its Applications*, Fifth Edition, by David Lay, Steven Lay, Judi McDonald. The following chapters including the particular sections listed are covered. (See textbook “Contents”)

1. **Linear Equations in Linear Algebra:** Systems of Linear Equations; Row Reduction and Echelon Forms; Vector Equations; The Matrix Equation $Ax = b$; Solution Sets of Linear Systems; Linear Independence; Introduction to Linear Transformations; The Matrix of a Linear Transformation.

2. **Matrix Algebra:** Matrix Operations; The Inverse of a Matrix; Characterizations of Invertible Matrices.

3. **Determinants:** Introduction to Determinants.

4. **Vector Spaces:** Vector Spaces and Subspaces; Null Spaces, Column Spaces, and Linear Transformations; Linearly Independent Sets, Bases; Coordinate Systems; The Dimension of a Vector Space; Rank.

5. **Eigenvalues and Eigenvectors:** Eigenvectors and Eigenvalues; The Characteristic Equation; Diagonalization.

Additional topics will be chosen from among the following: more on determinants, partitioned matrices, matrix factorizations, change of basis, topics from Chapter 6 (Orthogonality and Least Squares), topics from Chapter 7 (Symmetric Matrices and Quadratic Forms), and applications.

**Required Texts or Readings:**
There is no required textbook for this course.
Subject Matter Schedule

The subject matter schedule listed below is tentative, and subject to change and adaptation. For current, updated information about course topics, contact the instructor.

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* Optional
TBD = To Be Determined