MATH 3301 – 010 – Linear Algebra – Spring 2019

Contact Information:

- Instructor: Jesse Taylor
- Office: MCS 219E
- Email: jesse.taylor@angelo.edu
- Our Classroom: MCS 214
- Meeting Times: 8:00 - 8:50 MWF
- Office Hours:
  - Monday: 9:00-11:00 am
  - Tuesday: 9:15-11:00 am
  - Wednesday: 9:00-11:30 am
  - Thursday: 9:15-11:00 am
  - Friday: 9:00-11:00 am
  - If the above times do not work please email me to set up another time to meet

Required Textbook


Course Content

Selected sections from chapters 1-7 will be covered.

Homework/Quizzes

Homework will be assigned regularly throughout the semester. In general, I will assign problems after each section and will only grade a selection of them. We will also have quizzes throughout the semester, including the possibility of pop quizzes. Generally quizzes will consist of a couple of problems and will not take more than 15 minutes to complete. No late quizzes or homework will be accepted, regardless of whether or not you attend class. It is always your responsibility to attend class and know when an assignment is due and to make sure it is turned in or taken on time.

Tests

We will have three tests and a cumulative final exam. Below is a table containing the schedule for our tests, which is subject to change. If you have a conflict with one of the tests you must let me know at least one week before the test is taken to ensure that you receive a make-up exam. The earlier you let me know, the better.
### Test Material Covered Date

<table>
<thead>
<tr>
<th>Test</th>
<th>Material Covered</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1</td>
<td>Chapters 1 and 2</td>
<td>February 15</td>
</tr>
<tr>
<td>Test 2</td>
<td>Chapters 3 and 4</td>
<td>March 22</td>
</tr>
<tr>
<td>Test 3</td>
<td>Chapter 5, 6, and 7</td>
<td>April 26</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Cumulative</td>
<td>8:00-10:00am, Mon May 6</td>
</tr>
</tbody>
</table>

### Grading

Your grade in this class will be determined based on the following grading rubric.

- Homework/Quizzes: 20%
- Lowest regular test: 15%
- Other two tests: 20%
- Final Exam: 25%

Your final letter grade in this class will be determined based on a ten-point grading scale.

### Attendance

Attendance will be taken regularly, and each student’s absences will be reported with their final grade at the end of the semester.

### Technology

Unless you have special accommodations documented with the Student Life office, no cell phones, tablets, laptops, games, or other electronic devices may be used at any time during class.

### Study Aids

- The Math Lab offers free math help to all students enrolled in mathematics courses at or below the level of Calculus. The Math Lab is located on the third floor of the library (C302) and its times are listed below.
  - Monday – Thursday: 9:00am – 8:00pm
  - Friday: 9:00am – 12:00pm
  - Sunday: 4:00pm – 8:00pm
- The mathematics department maintains a list of students who are interested in tutoring privately. Students who are interested in obtaining private tutoring or serving as private tutors should visit the math department’s office for more information.
- Feel free to come by my office for help. I will be in or near my office during office hours (or there will be a note telling you when I will be back). If my office hours are not convenient for you, email me or speak with me during class to arrange another time that is more convenient.
Notes

- If the university is unexpectedly closed for a scheduled class time, whatever was scheduled for that day and/or whatever was due that day will be scheduled and/or due on the next scheduled class day.
- All electronic correspondence will be sent to your ASU email account unless other arrangements are made.
- If you do not receive a graded homework assignment, quiz, or test on the day they are returned, please come by my office during office hours to pick the assignment up.
- Good luck. I want you to succeed in this course. If at any point during the semester you feel as if you do not understand the material, please come talk with me as soon as possible. An ounce of prevention is worth a pound of cure.
- All items and dates in this syllabus are subject to change as the semester progresses. Students will be notified in class of any changes, and the changes will not be updated within this syllabus.

Mathematics 3301 – Linear Algebra

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.

Anticipated Schedule

Below is a table containing an approximate guide to what we will cover during each week of the semester. These topics are subject to change.
<table>
<thead>
<tr>
<th>Course Week</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sections 1.1, 1.2, and 1.3</td>
</tr>
<tr>
<td>2</td>
<td>Sections 1.4, 1.5, and 1.6</td>
</tr>
<tr>
<td>3</td>
<td>Sections 1.7, 1.8, and 2.1</td>
</tr>
<tr>
<td>4</td>
<td>Sections 2.2 and 2.3</td>
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<tr>
<td>5</td>
<td>Section 2.7 and Test 1</td>
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<tr>
<td>6</td>
<td>Sections 3.1 and 3.2</td>
</tr>
<tr>
<td>7</td>
<td>Sections 4.1, 4.2, and 4.3</td>
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<tr>
<td>8</td>
<td>Sections 4.3, 4.4, and 4.5</td>
</tr>
<tr>
<td>9</td>
<td>Section 4.6 and Test 2</td>
</tr>
<tr>
<td>10</td>
<td>Sections 5.1 and 5.2</td>
</tr>
<tr>
<td>11</td>
<td>Sections 5.3 and 6.1</td>
</tr>
<tr>
<td>12</td>
<td>Sections 6.2 and 6.3</td>
</tr>
<tr>
<td>13</td>
<td>Sections 7.1 and 7.2</td>
</tr>
<tr>
<td>14</td>
<td>Section 7.2 and Test 3</td>
</tr>
<tr>
<td>15</td>
<td>Review</td>
</tr>
<tr>
<td>16</td>
<td>Final exam: 8:00-10:00am, Monday, May 6</td>
</tr>
</tbody>
</table>

**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:

Dallas Swafford  
Director of Student Disability Services  
Office of Student Affairs  
325-942-2047  
dallas.swafford@angelo.edu
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 Boone  
Director of Title IX Compliance  
325-942-2022  
michelle.boone@angelo.edu

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. The full details can be found in ASU Operating Policy OP 10.19 Observance of Religious Holy Days.

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.

Student Conduct Policies

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

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1 Observance of Religious Holy Days: http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of
2 Grading Procedures: http://www.angelo.edu/content/files/14197-op-1011-grading-procedures
3 Academic Integrity: http://www.angelo.edu/student-handbook/community-policies/academic-integrity.php
4 ASU Writing Center: http://www.angelo.edu/dept/writing_center/academic_honesty.php
6 University Catalog: http://www.angelo.edu/catalogs/