South Plains College
Mathematics Department
Linear Algebra – MATH 2318
Course Syllabus
Summer I 2019

Instructor: Jay Driver
Telephone: (806) 716-2780
Email: jdriver@southplainscollege.edu
Office Hours: by appointment.

Course Description: MATH 2318. LINEAR ALGEBRA. (3:3:0) Prerequisite: MATH 2413.
This course introduces and provides models for application of the concepts of vector algebra. Topics include finite dimensional vector spaces and their geometric significance; representing and solving systems of linear equations using multiple methods, including Gaussian elimination and matrix inversion; matrices; determinants; linear transformations; quadratic forms; eigenvalues and eigenvector; and applications in science and engineering.

Course Objectives: Successful completion of this course should reflect mastery of the following objectives.
1. Be able to solve systems of linear equations using multiple methods, including Gaussian elimination and matrix inversion.
2. Be able to carry out matrix operations, including inverses and determinants.
3. Demonstrate understanding of the concepts of vector space and subspace.
4. Demonstrate understanding of linear independence, span, and basis.
5. Be able to determine eigenvalues and eigenvectors and solve problems involving eigenvalues.
6. Apply principles of matrix algebra to linear transformations.
7. Demonstrate application of inner products and associated norms.

Attendance: Attendance and effort are the most important activities for success in this course. Class attendance may be taken at any time during the class period, so please do not be late or leave early. You may be dropped from this course with a grade of X or F if you are absent <u>two consecutive classes or if you exceed three absences</u> throughout the summer term. Be on time and turn off any cell phones before entering the classroom.

Textbook: Textbook references for this course may be any of the following:
- Larson, R., Edwards, B. H. & Falvo, D. C. (2004). <u>Elementary Linear Algebra, Fifth ed.</u> Boston, MA: Houghton Mifflin Company. ISBN 0-618-33567-6.
- Larson, R. & Falvo, D. C. (2009). <u>Elementary Linear Algebra, Sixth ed.</u> Boston, MA: Houghton Mifflin Company. ISBN 0-618-78376-8.
- Larson, R. (2013). <u>Elementary Linear Algebra, Seventh ed.</u> Boston, MA: Brooks/Cole. ISBN 978-1-133-11087-3.
- Larson, R. (2017). <u>Elementary Linear Algebra, Eighth ed.</u> Boston, MA: Cengage Learning. ISBN 978-1-305-65800-4.

Assignments & Grading: Homework assignments will be made at each class meeting. Keep all class materials (notes, handouts, homework, quizzes, and exams) organized in a notebook (3-ring binder). These materials are subject to be turned in for grading at any time. Please make certain all materials accompany you to each class meeting. <u>No late assignments will be accepted.</u> Daily work (homework, quizzes, notebooks) will count for 20% of the final grade, while all exams count for 80% of the final grade. Expect two major exams (25% each) throughout the course and a <u>cumulative</u> final exam (30%) at the end of the course. Your final average in the course will determine the letter grade posted on your transcript. This grade is determined by the following scale: A (90-100%), B (80-89%), C (70-79%), D (60-69%), F (0-59%).

Format for submitting assignments:
1. Write the problem.
2. Show <u>all</u> necessary work.
3. Clearly mark your answer.
4. Check your answers on Blackboard to make certain you are practicing correctly.

Blackboard: Blackboard is the online course management system that will be utilized for this course. This course syllabus, as well as any class handouts can be accessed through Blackboard. Login at http://southplainscollege.blackboard.com. The user name and password should be the same as the MySPC and SPC email.

> User name: first initial, last name, and last 4 digits of the Student ID
> Password: Original CampusConnect Pin No. (found on SPC acceptance letter)

Check Blackboard often for the latest announcements, tutoring schedule, and course supplements (handouts, online practice quizzes, additional notes, sample problems for practice, etc.). Free tutoring is also available at Building 2 on the Reese Campus.

Supplies: You will need a calculator capable of <u>matrix algebra</u> (the TI-84 graphing calculator works well), a minimal supply of graph paper, and a 3-ring binder. Calculators on cell phones or other electronic devices will not be allowed during testing.

Student Conduct: You are expected to be respectful to others in the classroom. Please assist in maintaining a classroom environment conducive to learning. Any student disrupting the learning environment will be asked to leave and may be dropped from the course.

Diversity: In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

Disability: Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office at Levelland (Student Health & Wellness Office) 806-716-2577, Reese Center (Building 8) & Lubbock Center 806-716-4675, or Plainview Center (Main Office) 806-716-4302 or 806-296-9611.

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Linear Algebra Tentative Course Outline
MATH 2318.001 (MTWR 8:00 –9:55)
Summer I 2019
Reese Center, RC221

Week	Day	Date	Lesson Topics / Assignments / Exams
1	Monday	June 3	*Assignment 1:* Linear Systems & Gauss-Jordan Elimination (GJE)
	Tuesday	June 4	*Assignment 2:* Applications of Linear Systems & Summations
	Wednesday	June 5	*Assignment 3:* Matrix Operations & Properties
	Thursday	June 6	*Assignment 4:* Matrix Inverses & Special Matrices
2	Monday	June 10	*Assignment 5:* Elementary Matrices (LU) and Intro. to Determinants
	Tuesday	June 11	*Assignment 6:* Determinant Properties
	Wednesday	June 12	*Assignment 7:* Determinant Applications
	Thursday	June 13	**Exam 1 (25%)**
3	Monday	June 17	*Assignment 8:* Vector Spaces
	Tuesday	June 18	*Assignment 9:* Linear Independence
	Wednesday	June 19	*Assignment 10:* Basis and Dimension & Rank
	Thursday	June 20	*Assignment 11:* Change of Basis & Vector Operations (part 1 of 2)
4	Monday	June 24	*Assignment 12:* Vector Operations (part 2 of 2)
	Tuesday	June 25	*Assignment 13:* Linear Transformations (part 1 of 2)
	Wednesday	June 26	*Assignment 14:* Linear Transformations (part 2 of 2)
	Thursday	June 27	**Exam 2 (25%)**
5	Monday	July 1	*Assignment 15:* Transition Matrices & Similarity
	Tuesday	July 2	*Assignment 16:* Eigenvalues / Eigenvectors
	Wednesday	July 3	*Assignment 17:* Diagonalization / Orthogonal Diagonalization
6	Monday	July 8	*Assignment 18:* Applications of Eigenvalues & Eigenvectors
	Tuesday	July 9	**Final Exam (30%)**