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South Plains College
Common Course Syllabus: Linear Algebra (MATH 2318)
Summer I 2020

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Department: Mathematics, Engineering, and Computer Science

Discipline: Mathematics

Course Number: MATH 2318

Course Title: Linear Algebra

Available Format: online

Campus: online

Course Description: 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.

Prerequisite: Successful completion with a grade of 'C' or better in MATH 2414 (Calculus 2).

Credit: 3 **Lecture:** 3 **Lab:** 0

This course partially satisfies a Core Curriculum Requirement: N/A.

Core Curriculum Objectives addressed:
- **Communications skills**—to include effective written, oral and visual communication
- **Critical thinking skills**—to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- **Empirical and quantitative competency skills**—to manipulate and analyze numerical data or observable facts resulting in informed conclusions

Student Learning Outcomes: Upon completion of this course and receiving a passing grade, the student will be able to:

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.

Student Learning Outcomes Assessment: Assignment exercises and exams will be used to determine the extent of improvement that the students have gained during the semester. More detailed information regarding assignments and exams is given below.

Instructor: Jay Driver

Telephone: (806) 716-2780

Email: The instructor may be emailed through Blackboard or at jdriver@southplainscollege.edu.

Virtual Office Hours: By appointment (scheduled in Blackboard)

Attendance Policy: Since this course is completely online, there are no scheduled meetings. Logging into Blackboard to submit assignments and exams will account for attendance in the class. Failure to login and consistently submit assignments and/or exams may result in the student being administratively withdrawn from the class with a grade of 'F' or 'X'.

Textbook: Textbook references for this course may be <u>any</u> 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.

Supplies: You will need a calculator capable of matrix algebra (a TI-graphing calculator such as the TI-84 works well), a minimal supply of graph paper, and a 3-ring binder. Calculators on cell phones or other electronic devices are strongly discouraged and will <u>not</u> be allowed during testing without permission.

Blackboard: This course is completely online, so all access to course information and your instructor is through the Internet. Blackboard is the online course management system that will be utilized for this course. This course syllabus, as well as all course materials can be accessed through Blackboard. Login at https://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)

Questions regarding Blackboard support may be emailed to blackboard@southplainscollege.edu or by telephone to 806-716-2180.

To maximize the potential for successfully completing this course:
- login to Blackboard daily;
- watch the lecture videos and take notes on them;
- thoroughly complete and submit the assignments on time;
- practice the exercises repeatedly until you have full mastery of them;
- thoroughly complete and submit the exams.

Course Evaluation: Assignments will count for 20% of the final grade, while exams count for 80% of the final grade. Expect 19 assignments and 4 scheduled exams throughout 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%).

Grading Policy: Assignments (20 total) = 20%
> Exam 1 (covering Assignments 1-4) = 15%
> Exam 2 (covering Assignments 5-8) = 20%
> Exam 3 (covering Assignments 9-14) = 20%
> Exam 4 (covering Assignments 15-19) = 25%.

Assignments and Exams List: The following is a sequential list of the assignments and exams.

0. Course Introduction Online Meeting
1. Linear Systems
2. Gauss-Jordan Elimination
3. Applications of Linear Systems
4. Summations
   Exam 1 (15%)
5. Matrix Operations
6. Special Matrices
7. Determinants
8. Applications of Determinants
   Exam 2 (20%)
9. Vector Spaces
10. Linear Independence
11. Basis & Dimension
12. Rank
13. Change of Basis
14. Vectors
    Exam 3 (20%)
15. Linear Transformations
16. Transition Matrices & Similarity
17. Eigenvalues and Eigenvectors
18. Diagonalization
19. Applications of Eigenvalues
    Exam 4 (25%)

Course Introduction Online Meeting: The instructor will meet face-to-face in a virtual setting using Blackboard Collaborate. The purpose for this meeting is to allow the instructor and the student to formally meet and allow the student to learn and ask questions regarding the format and policies of the course.

Assignment Format and Policy: Assignments are given after each lesson and are collected according to the calendar below. For each question on each assignment:

- Write the question number.
- In solving the problem, show all necessary work.
- Clearly mark your answer.
- Check your answers in Blackboard to make certain you are practicing the exercises correctly.
- Write your name at the top of each page of your work.
- Submit the assignment in Blackboard.

Late assignments will be accepted up to the day before the scheduled exam with a 10% deduction per day late. Make certain to complete and submit assignments on time (or early). Early submissions are welcomed!

Exam Format and Policy: There are 4 units of study in this course. At the conclusion of each unit is a timed examination. Once you activate the exam link in Blackboard, you will have 2 ½ hours to complete the exam and submit it.

> Here is an example: You click on the Blackboard link to retrieve the exam at 5:30am. You now have until 8:00am to get your work uploaded back into Blackboard.

For each question on each exam:

- Write the question number.
- In solving the problem, show all necessary work.
- Clearly mark your answer.
- Write your name at the top of each page of your work.

The link for each exam will be released at 12:00am on the scheduled exam date according to the calendar below. The deadline for submitting an exam is 11:59pm.

Here is a sample scenario: to maximize your 2 ½ hours and still meet the deadline, you would need to retrieve the exam no later than 9:29pm.

Submit the exam in Blackboard before the time expiration of 11:59pm. Late submissions of exams are not acceptable. Make certain exams are submitted within the given time constraints.

Course Calendar: Below is a calendar view of assignment and exam due dates and times.

Monday	Tuesday	Wednesday	Thursday	Friday
		June 3: Assignments 1 and 2 due by 11:59pm.		June 5: Assignments 3 and 4 due by 11:59pm.
June 8: Exam 1 (released at 12:00am; 2 ½ - hour time limit; due by 11:59pm).		June 10: Assignments 5 and 6 due by 11:59pm.		June 12: Assignments 7 and 8 due by 11:59pm.
June 15: Exam 2 (released at 12:00am; 2 ½ - hour time limit; due by 11:59pm).		June 17: Assignment 9 due by 11:59pm.	June 18: Assignment 10 due by 11:59pm.	June 19: Assignment 11 due by 11:59pm.
	June 23: Assignments 12 and 13 due by 11:59pm.		June 25: Assignment 14 due by 11:59pm.	June 26: Exam 3 (released at 12:00am; 2 ½ - hour time limit; due by 11:59pm).
June 29: Assignment 15 due by 11:59pm.	June 30: Assignment 16 due by 11:59pm.	July 1: Assignment 17 due by 11:59pm.	July 2: Assignment 18 due by 11:59pm.	July 3: Assignment 19 due by 11:59pm.
July 6: Exam 4 (released at 12:00am; 2 ½ - hour time limit; due by 11:59pm).				

Academic Integrity (Plagiarism and Cheating Policy): "Complete honesty is required of the student in the presentation of any and all phases of course work. This idea applies to quizzes of whatever length as well to final examinations, to daily reports, and to term papers" *(SPC General Catalog)*.

Plagiarism violations include, but are not limited to, the following:
1. Turning in a paper that has been purchased, borrowed, or downloaded from another student, an online term paper site, or a mail order term paper mill;
2. Cutting and pasting together information from books, articles, other papers, or online sites without providing proper documentation;
3. Using direct quotations (three or more words) from a source without showing them to be direct quotations and citing them; or
4. Missing in-text citations.

Cheating violations include, but are not limited to, the following:
1. Obtaining an examination by stealing or collusion;
2. Discovering the content of an examination before it is given;
3. Using an unauthorized source of information (notes, textbook, text messaging, internet, apps) during an examination, quiz, or homework assignment;
4. Entering an office or building to obtain an unfair advantage;

5. Taking an examination for another;
6. Altering grade records;
7. Copying another's work during an examination or on a homework assignment;
8. Rewriting another student's work in Peer Editing so that the writing is no longer the original student's;
9. Taking pictures of a test, test answers, or someone else's paper.

If you are involved in plagiarism or cheating on assignments or exams, you will receive a point deduction, or a zero for the assignment, or be dropped from the course with the grade of "F" or "X," at the instructor's discretion.

Student Code of Conduct Policy: Any successful learning experience requires mutual respect on the part of the student and the instructor. Neither instructor nor student should be subject to others' behavior that is rude, disruptive, intimidating, aggressive, or demeaning**.** Student conduct that disrupts the learning process or is deemed disrespectful or threatening shall not be tolerated and may lead to disciplinary action and/or removal from class.

Diversity Statement: 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 Statement: 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) 806-716-4675, or Plainview Center (Main Office) 806-716-4302 or 806-296-9611.

Nondiscrimination Policy: South Plains College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies: Vice President for Student Affairs, South Plains College, 1401 College Avenue, Box 5, Levelland, TX 79336. Phone number 806-716-2360.

Title IX Pregnancy Accommodations Statement: If you are pregnant, or have given birth within six months, Under Title IX you have a right to reasonable accommodations to help continue your education. To activate accommodations you must submit a Title IX pregnancy accommodations request, along with specific medical documentation, to the Director of Health and Wellness. Once approved, notification will be sent to the student and instructors. It is the student's responsibility to work with the instructor to arrange accommodations. Contact the Director of Health and Wellness at 806-716-2362 or email cgilster@southplainscollege.edu for assistance.

Campus Concealed Carry: Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in South Plains College buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and South Plains College policy, license holders may not carry a concealed handgun in restricted locations. For a list of locations and Frequently Asked Questions, please refer to the Campus Carry page at: http://www.southplainscollege.edu/campuscarry.php
Pursuant to PC 46.035, the open carrying of handguns is prohibited on all South Plains College campuses. Report violations to the College Police Department at 806-716-2396 or 9-1-1.

SPC Bookstore Price Match Guarantee Policy: If you find a lower price on a textbook, the South Plains College bookstore will match that price. The difference will be given to the student on a bookstore gift certificate! The gift certificate can be spent on anything in the store.

If students have already purchased textbooks and then find a better price later, the South Plains College bookstore will price match through the first week of the semester.   The student must have a copy of the receipt and the book has to be in stock at the competition at the time of the price match.

The South Plains College bookstore will happily price match BN.com and books on Amazon noted as *ships from and sold by Amazon.com*. Online marketplaces such as *Other Sellers* on Amazon, Amazon's Warehouse Deals, *fulfilled by* Amazon, BN.com Marketplace, and peer-to-peer pricing are not eligible. They will price match the exact textbook, in the same edition and format, including all accompanying materials, like workbooks and CDs.

A textbook is only eligible for price match if it is in stock on a competitor's website at time of the price match request. Additional membership discounts and offers cannot be applied to the student's refund.

Price matching is only available on in-store purchases.   Digital books, access codes sold via publisher sites, rentals and special orders are not eligible. Only one price match per title per customer is allowed.

Note: The instructor reserves the right to modify the course syllabus and policies, as well as notify students of any changes, at any point during the semester.