

## Mathematics 2360, Section 121 (Fall 2020): Linear Algebra

**Instructor:** Dmitri Pavlov, Assistant Professor

**Teaching assistant:** Mason Springfield

**CRN:** 13904

**Midterms:** Friday, September 25 and Friday, November 6.

**Comprehensive final exam:** Friday, December 4

**The Learning Center:** Drane Hall 164, <https://www.depts.ttu.edu/soar/lc/>

**Website:** <https://dmitripavlov.org/#teaching>

**Office hours and email:**

- questions about mathematics, including class material (videos and notes), textbook, homework: [mason.springfield@ttu.edu](mailto:mason.springfield@ttu.edu)
- questions about enrollment, dropping class, potential student misconduct, missed exams: [dmitri.pavlov@ttu.edu](mailto:dmitri.pavlov@ttu.edu)

**Homework:** <https://webwork.math.ttu.edu/webwork2/f20dpavlovm2360s121/>

**Prerequisites:** C or better in MATH 1452 or consent of department.

**Official textbook:** Ron Larson, Elementary Linear Algebra. (No access code necessary.)

8th edition (ISBN 1305658000),

7th edition (ISBN 1133110878, 1133111343).

**Last day to add a course:** August 27

**Last day to drop a course without academic penalty:** September 9

**Last day to drop a course with academic penalty:** November 24

**Last day of classes:** December 2

### 1 Course outline

Finite-dimensional vector spaces, linear transformations and matrices, eigenvalues and eigenvectors.

### 2 Expected learning outcomes

Upon the completion of this course students will be able to

- perform basic vector algebra, compute bases of vector spaces, compute coordinates of a vector;
- perform basic matrix algebra, compute matrices of linear maps, solve systems of linear equations;
- compute determinants and inverses of matrices;
- compute orthonormal bases using the Gram–Schmidt process;
- perform orthogonal diagonalization of symmetric matrices;
- compute eigenvalues and eigenvectors.

### 3 Assessment of learning outcomes

Homework will be assigned using the WeBWorK system. Usernames and passwords will be distributed via TTU email. All homework must be submitted on or before the last day of classes.

Two midterms and a comprehensive final exam will be administered at designated days. There will be no make-up exams. Absences at midterms excused in accordance with TTU's operating policies (see below) will result in a pro rata rescaling of the remaining points. Announcements about midterms will be made via TTU email. Students are expected to check their TTU email regularly for updates.

#### 4 Criteria for grade determination

The final score will be computed by adding points as follows:

- homework (52 points),
- two midterm exams (12 points each),
- comprehensive final exam (27 points).

The final grade is assigned according to the following rubric:

$[0, 60) \mapsto F, D$ ,  $[60, 70) \mapsto D$ ,  $[70, 80) \mapsto C$ ,  $[80, 90) \mapsto B$ ,  $[90, 100) \mapsto A$ ,  $[100, 103] \mapsto A+$ .

There is a 3-point curve built in the grading system. No other curves will be applied.

Homework is graded automatically by the WeBWorK system. A total of 130 homework problems will be assigned, each problem is worth 0.4 points.

Both midterms will have 4 problems each and the final exam will have 9 problems.

Each problem on the midterms and final exam is worth 3 points, which are assigned as follows.

- 3 points: the final answer is correct, all intermediate steps and claims are correct, no missing steps;
- 2 points: arithmetic mistakes, i.e., getting to 3 points requires adjusting only some numbers;
- 1 point: parts of the solution can be reused as at least 1/3 of a correct solution;
- 0 points: everything else, including submissions that merely mention the name of a method.

#### 5 Regrading policy

Questions about the WeBWorK system possibly grading a homework problem incorrectly should be addressed directly to the teaching assistant.

Grade disputes for exam problems are resolved as follows:

- A successful appeal to increase the grade to 2 points requires the student to demonstrate how to change some numbers in the solution (and nothing else) to get a correct solution.
- A successful appeal to increase the grade to 1 point requires the student to provide a written correct solution to the problem such that at least 1/3 of this solution duplicates (with no nonnumerical changes) parts of the original solution, in an essential way, so that removing any of these parts will not result in a correct solution.

#### 6 Operating policy 34.04, §4: Class attendance

Appropriate documentation and advance notification is required for any excused class absences.

- Department chairpersons, directors, or others responsible for a student representing the university on officially approved trips must notify the student's instructors of the departure and return schedules.
- In case of an illness that will require an absence from class for more than one week, the student should notify her/his academic dean. The dean's office will inform the student's instructors through the departmental office. In case of class absences because of a brief illness, the student should inform the instructor directly.
- Refer to OP 34.19, Student Absence for Observance of Religious Holy Days, for information regarding an absence to observe a religious holy day.

#### 7 Operating policy 34.19: Student absence for observance of religious holy day

1. "Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code §11.20.

2. A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.

3. A student who is excused under section 2 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

## **8 Operating policy 34.22, §2a: Reasonable accommodation for students with disabilities**

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806.742.2405.

## **9 Operating policy 34.12, §4: Texas Tech University Statement of Academic Integrity**

Academic integrity is taking responsibility for one's own class and/or course work, being individually accountable, and demonstrating intellectual honesty and ethical behavior. Academic integrity is a personal choice to abide by the standards of intellectual honesty and responsibility. Because education is a shared effort to achieve learning through the exchange of ideas, students, faculty, and staff have the collective responsibility to build mutual trust and respect. Ethical behavior and independent thought are essential for the highest level of academic achievement, which then must be measured. Academic achievement includes scholarship, teaching, and learning, all of which are shared endeavors. Grades are a device used to quantify the successful accumulation of knowledge through learning. Adhering to the standards of academic integrity ensures grades are earned honestly. Academic integrity is the foundation upon which students, faculty, and staff build their educational and professional careers. (Texas Tech University Quality Enhancement Plan, Academic Integrity Task Force, 2010.)