

**COURSE SYLLABUS**  
**LINEAR ALGEBRA, MATH 2360-006, CRN 32302**

## Instructor

Giorgio Borna, Assistant Professor  
Office: MATH 224 Office phone: (806) 834-8754  
E-mail: giorgio.bornia@ttu.edu  
Office hours: T 03:00-04:00pm, W 02:00-03:50pm, or by appointment.  
Website: <http://www.math.ttu.edu/~gbornia>

## Weekly meeting

TR 12:30pm-01:50pm, room MCOM 353

## Course general description

This course covers topics in linear algebra. Topics to be covered include: finite-dimensional vector spaces, linear transformations and matrices, eigenvalues and eigenvectors.

Prerequisite: MATH 2450, or concurrent with MATH 2450, or consent of department.

## Expected Student Learning Outcomes

MATH 2360 satisfies the university core curriculum requirement in Mathematics: "Students graduating from Texas Tech University should be able to demonstrate the ability to apply quantitative and logical skills to solve problems". It meets the following TTU general education student learning outcomes for mathematics that students will: apply arithmetic, algebraic, geometric, statistical and logical reasoning to solve problems; represent and evaluate basic mathematical and/or logical information numerically, graphically, and symbolically; interpret mathematical and/or logical models such as formulas, graphs, tables and schematics, and draw inference from them.

Students develop skill in manipulating with matrices and understand their relationship to linear systems. They understand the concept of bases and vector spaces, as well as eigenvectors and eigenspaces. In particular, students perform basic vector algebra, and compute their bases; express a linear transformation as a matrix; perform basic matrix manipulations, and compute the determinant of a matrix; compute eigenvalues and eigenvectors; use the Gram-Schmidt process.

## Course outline

Textbook: *Elementary Linear Algebra*, by R. Larson, Cengage Learning. Chapters 1, 2, 3, 4, 5, 6, 7.

Chap. 1- **Systems of linear equations** [~4 hours]

Chap. 2- **Matrices** [~5 hours]

Chap. 3- **Determinants** [~4 hours]

Chap. 4- **Vector spaces** [~8 hours]

Chap. 5- **Inner product spaces** [~6 hours]

Chap. 6- **Linear transformations** [~7 hours]

Chap. 7- **Eigenvalues and eigenvectors** [~5 hours]

## Assessment of Learning Outcomes

### Homework

It will be given regularly through the WebWork system:

<http://webwork.math.ttu.edu/webwork2/f16gborniam2360s006> Students will be informed by the instructor and via email (on the @ttu.edu address) about the homework, which must be completed before the given deadline. Several homework problems will be discussed in class at a later time. Homework is worth 25% of the final grade.

### Examinations

- Exam #1: **Tuesday, October 4**, worth 25% of the final grade
- Exam #2: **Thursday, November 10**, worth 25% of the final grade
- Final Exam: **Saturday, December 10, 1:30pm-4:00pm, room MCOM 353**, worth 25% of the final grade

Use of calculators in all the exams is not permitted. Electronic devices which can store formulas, including cell phones, must be turned off and stored during the exams. The instructor will specify what sections must be studied for each exam.

## **Attendance**

Attendance is mandatory. Students with up to 4 missed classes for the entire semester will receive an additional bonus of 3% on the final grade.

## **Grading Policy**

Let  $g$  be the grade in percent:  $g < 55$  F,  $55 \leq g < 66$  D,  $66 \leq g < 76$  C,  $76 \leq g < 88$  B,  $88 \leq g < 100$  A,  $g \geq 100$  A+

The grading policy may be subject to slight adjustments depending on the achievements of the students.

## **Make-ups**

There are usually no make-ups for the examinations, except for reasons of illness, stated in writing by a medical doctor, or observance of a religious holiday, or other very reasonable motivations.

## **Class Policies**

If students miss a class, it is their responsibility to find out what they missed (announcements, assignments, notes ...). Also, it is their responsibility to frequently check their e-mail for announcements made by the instructor. Students are strongly encouraged to read each section of the textbook in advance of the lecture.

Classes start and end always on time. Students are not allowed to leave the class before the end of the hour without authorization. During class time it is not allowed to text, chat and sleep. All electronic devices must be put in silent mode.

## **TTU Operating Policies**

### **Americans with Disabilities Act (TTU OP 34.22)**

Any student who, because of a disability, may require some special arrangements in order to meet 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 student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office at 335 West Hall or 806-742-2405.

### **Absence for observance of a religious holy day (TTU OP 34.19)**

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 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.

### **Academic Honesty (TTU OP 34.12)**

It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension. "Scholastic dishonesty" includes, but it not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

### **The grade of "I" (TTU OP 34.12)**

The grade of "I" is given only when a student's work is satisfactory but, due to reasons beyond his or her control, cannot be completed. It is not given in lieu of an "F" or "W". The instructor assigning the grade will stipulate in writing at the time the grade is given the conditions under which the "I" may be removed. The assigned work and a change of grade must be recorded within one calendar year from the date of the "I". Failure to do so results in an "F" for that course.