TTU – MATH 2360 – Linear Algebra – Fall 2015

Section / Time / Location:	008 / MWF 9:00-9:50am / MATH 108	**Instructor:**	Josh Engwer
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			or Google^{TM} "josh engwer"
Office Hours:	MWF 10:00am - 12:00pm (or by appt.)	**Office:**	MATH 003A
Textbook:	*ELEMENTARY LINEAR ALGEBRA* 7th Ed by Larson		

Prerequisites: Any one of [**A**]-[**B**] below.   (Legend: / = 'or', + = 'and', :X = '**at least** a grade/score of X')

   [**A**] MATH 2450:C   (may be taken concurrently)   [**B**] Departmental permission   [i.e. **Calculus III**]

Course Content: (not exhaustive, but the main themes – hours are approximate)

(4 *hrs*)	Ch1	**Linear Systems** :	Elem. Row Operations, Gauss-Jordan Elimination, Interpretation, Network Flows
(5 *hrs*)	Ch2	**Matrices** :	Algebra, Properties, Inverses, Elementary Matrices, *LU*-Factorization
(4 *hrs*)	Ch3	**Determinants** :	Sparse/Dense Matrices, Cofactor Expansions, Properties, Geometric Applications
(8 *hrs*)	Ch4	**Vector Spaces** :	Linear Combinations, Subspaces, Spans, Independence, Basis, Change-of-Basis
(6 *hrs*)	Ch5	**Inner Product Spaces** :	Norms, Metrics, Projections, Orthonormal Bases, Gram-Schmidt, Least-Squares
(7 *hrs*)	Ch6	**Linear Transformations** :	Domain, Codomain, Kernel, Range, Isomorphisms, Standard Matrices
(5 *hrs*)	Ch7	**Eigenspaces** :	Eigenvalues, Eigenvectors, Symmetric Matrices, (Orthogonal) Diagonalization

Final Grade Assessment: Attendance – 5%, Homework – 10%, 3 x Midterm Exams (20% each) – 60%, **Final Exam – 25%**

Final Grade Scale: A: 100%-90%   B: 89%-80%   C: 79%-70%   D: 69%-60%   F: 59%-0%

Attendance Policy: Attendance will be taken – it's your responsibility to sign/initial your name on the roll sheet each class.

Homework: All homework (HW) is assigned & completed online through **WeBWorK**.
You should work HW problems by pencil & paper to realize the amount of work to be expected for similar problems on exams.

Midterm Exams: In-class, **closed-'everything'** (i.e. no books/notes, no formulas, no calculators/phones/PC's/tablets, ...)
Expect midterm exam questions to be mostly/entirely free-response!
Sufficient correct work must be shown to receive full points on exam problems – **answers without work earn no credit!**
Be prepared to show a photo ID (ideally, your RaiderCard)

Final Exam: In-class, **comprehensive**, **closed-'everything'**; **instructor writes Final Exam, not Math department.**
Expect final exam questions to be mostly/entirely free-response!
It will be administered on **Tuesday, December 8th, 7:30am - 10:00am in room MATH 108**.
FAILING TO SHOW UP & TAKE THE FINAL EXAM WILL RESULT IN A FINAL GRADE OF "F",
REGARDLESS OF HOW STELLAR YOUR COURSE GRADE MAY BE BEFORE THE FINAL EXAM!!

Make-up Policy: **Homework will not be accepted late – hence, no make-ups for homework**.
There will be no make-up exams given except for observance of a religious holiday.
If a midterm exam is missed for a **legitimate documented** reason, then the Final Exam score will replace it.
Some legitimate excuses (with documentation): university field trip, severe illness, death in the family, ...
Some non-legitimate excuses: "I already bought plane tickets", "I was stuck in traffic", "I overslept", ...

Email Communication: Please use your **TTU email address** when sending email to the instructor.
All instructor-responses & class-wide announcements will be sent to your **TTU email address**.

KEYS TO SUCCESS: Show up.   Work problems.   Seek help when stuck.   Show work.   Manage time.

I never curve nor accept exam corrections nor drop the lowest exam score nor assign extra credit assignments!

Learning Objectives: MATH 2360 satisfies part of 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 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 or logical models such as formulas, graphs, tables and schematics and draw inference from them.

In particular, students will master the concepts of:

- 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 & eigenvectors.
- Use the Gram-Schmidt process.

ADA Accommodation: (from OP §34.22)

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should present appropriate verification from Student Disability Services (SDS) during the instructor's office hours.

For details, contact the **SDS office:** **(Address) 335 West Hall** **(Phone) 806-742-2405**.

Religious Holy Day Observance: (from OP §34.19)

- "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.
- A student who intends to observe a religious holy day should make that intention known in writing beforehand.
  A student who is absent for the observance of a religious holy day shall be allowed to take an exam or complete an assignment scheduled for that day within a reasonable time after the absence.
- A student who is excused for a religious holy day observence may not be penalized for the absence.
  However, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

Civility in the Classroom: Students are expected to assist in maintaining a classroom environment conducive to learning.

- No chatting. No newspapers. No periodicals. No music players. Silence phones.
- **When the instructor says "Let's get started," all talking should stop**.
- Students who insist on using a laptop or tablet should sit in the back two rows. Of course, the device should be silenced.

Academic Integrity: (from OP §34.12)

It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and a high standard of integrity. **Any attempt of scholastic dishonesty by the student is liable to serious consequences, possibly suspension**.

Scholastic Dishonesty: "Scholastic dishonesty" includes (but is not limited to): **Cheating** & **Misrepresenting Facts**

Cheating: "**Cheating**" includes (but is not limited to):

- Copying from another student's exam
- Using unauthorized materials during an exam
- Collaborating with another student during an exam
- Leaving the exam room without submitting the exam for grading
- Taking an exam for someone else

Misrepresenting Facts: "**Misrepresenting facts**" includes (but is not limited to):

- Marking an absent student as present on the attendance roll sheet.
- Providing false or misleading information in an effort to receive a postponement or an extension on an exam or HW.