

MATH 2010 COURSE SYLLABUS

Spring 2023

Elementary Linear Algebra (8th Edition) by Ron Larson ISBN 978-1-305-65800-4

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OFFICE HOURS: Monday – Thursday 1:00 – 3:00 PM

I can have Zoom sessions upon request during these times. With some advance notice, I can be available for private Zoom sessions at other times, including times during the evening before 9:00 PM.

Some of us may have to quarantine this semester. If I need to quarantine, then the class will go fully remote. I will update the syllabus if this happens. If you need to quarantine, it is critical that you keep in touch with me. You will be required to attend class via Zoom.

Prerequisites: This course requires completion of Calculus I or its equivalent with a grade of C or better. Some exposure to formal proof, multivariable calculus, or physics is very helpful but not required.

You will need a graphing calculator capable of manipulating matrices; a TI-84 Plus calculator is strongly encouraged as this will be the calculator used for class demonstrations.

During regular class time, you may use mobile devices, laptops, etc. to access class-related sources; however, you may not text, conduct non class-related searches, or work on assignments from other classes.

Class lectures will be captured via Panopto and will be available in your D2L course shell. *Due to the privacy rights of your classmates, you are not allowed to videotape the class.*

You may not use any mobile devices during exams unless I have approved the use beforehand.

Purpose: This course develops the definitions, processes and applications associated with vectors. We will begin with basic definitions and develop the arithmetic properties and analytic processes of vectors and matrices; applications will be included as material is developed. Vector spaces, vectors, and matrices are major tools in multi-dimensional mathematics; thus this course is crucial to the study of multi-dimensional geometry, computer science, business, physics, and engineering.

OBJECTIVES: Upon completion of this course, students will have

- developed enhanced mathematical and problem solving skills
- learned the basic definitions and arithmetic properties of vectors and matrices
- developed an understanding of the geometric implications of vectors and matrices
- developed understanding of the role and properties of linear transformations between multi-dimensional spaces
- learned to use technologies which are appropriate to the material in the course
- explored a variety of linear algebra applications
- developed fluency with matrices in structuring calculations and as mathematical elements in their own right.

REQUIREMENTS: In general, you are expected to

- attend class lectures and work participate in class discussions
- read and study class assignments and solve assigned problems
- ask questions in class or in my office when unsure of any concept or unclear on any assigned problem
- take all announced exams (including the final) on the day they are scheduled.

TOPICAL OUTLINE: This course will include material from Chapters 1-6 of the required text. Topics included in the course include but are not necessarily limited to

- Matrices and Systems of Linear Equations
- Determinants Vectors in 2,3, and n-dimensional spaces
- General Vector Spaces and products in vector spaces
- Linear Transformations , with special reference to those maps from n dimensional to m dimensional Euclidean spaces
- Inner product spaces

GRADING: Your grade will be determined by your performance on a comprehensive final exam , a minimum of four closed-book in-class exams, weekly concept quizzes, and WebAssign homework.

- The final exam will count 15% of your end-of-semester grade.
- Your cumulative score on the closed-book exams will count 60% of your end-of-semester grade.
- Your cumulative score on the concept quizzes will count 15% of your end-of-semester grade.
- Your WebAssign homework grade will count 10% of your end-of-semester grade.

All in-class graded activities will be curved at the end of the semester; in particular, the maximum cumulative score attained in each category becomes 100% for that category. Your grade will be computed using the following formula.

- Let F represent your final exam score, let E represent your cumulative exam score, and let Q represent your cumulative quiz score.

Your end-of-semester grade will be

$$G = 0.15 * \left(\frac{F}{\text{Max Final Score}} \right) + 0.15 * \left(\frac{Q}{\text{Max Quiz Score}} \right) + 0.60 * \left(\frac{E}{\text{Max Exam Score}} \right) + 0.10 * (\text{WebAssign Score})$$

You can use this formula throughout the semester to *estimate* your current grade --- simply take the maximum possible points as the maximum score in each category. If any data is missing (like the final exam), simply rescale your score by the missing percentage.

ATTENDANCE: I am required to monitor your attendance and report to your OneStop advisor should you stop attending or your attendance becomes irregular. Regulations aside, attendance is expected and vital for this class. Absences are not excuses for missing a graded in-class activity. Makeup exams will not be given unless you have made prior arrangements with me. With the exception of dire family emergency, you must contact me no later than the due day to get approval for late work.

- Except for medical or family emergencies, the scheduled makeup time cannot be more than two weekdays after the due date.

I usually return an exam or quiz no more than two class days after it is given. It is your responsibility to monitor your progress in the course. I strongly recommend you actively ask questions in class or come to my office regularly to discuss your progress. I will be happy to suggest strategies for helping you succeed, but no strategy provides a quick-fix. *Do not wait until the last few weeks of class to try improving your grade.*

THERE ARE NO OPPORTUNITIES FOR EXTRA CREDIT IN THIS COURSE.

This syllabus is only a guide for your convenience; I reserve the right to make changes as class needs dictate.

Important dates:

Jan 30 --- Last day to drop without a grade

March 26 --- Last day to drop with a "W"

March 6 – 11 --- Spring Break (No Classes)

April 27 --- Study Day (No Classes)

April 28 – May 4 --- Finals Week

EXAM 2 WILL BE GIVEN ON THURSDAY MAY 4 --- 10:00 AM - 12:00 PM

IMPORTANT: It is Department policy not to grant withdrawals after the withdrawal deadline has passed, unless circumstances have arisen which make it impossible for you to complete the course. Late withdrawals must be approved by the Department Chair and often require documentation for the extenuating circumstances.

MTSU COVID-19 Policy

Attendance: Students should not attend an on-ground, in-person class if they are ill, have any symptoms listed in the PreClass COVID-19 Self-Assessment, have tested positive for COVID-19, or have been in close contact with others who have tested positive. If they have tested positive or have been in close contact with someone who has, they should consider self-quarantine (see guidelines below). Students are expected to keep their instructors informed regarding their status when they are absent from class and act with good faith and honesty when determining whether or not they attend class. For more information, visit [MTSU Policies](#).

Isolation/Quarantine: MTSU has updated its isolation protocols as recommended by state and federal public health officials. The isolation requirement has been decreased to five days if symptoms are resolving, so that on Day 6 students and employees can resume activities (with masking through Day 10). Also, fully vaccinated individuals (boosted or within six months of last mRNA vaccine or within last two months of J&J) do not need to quarantine. And, those who are unvaccinated or not meeting full vaccination criteria need to quarantine five days, test on Day 5, and if negative, can resume activity wearing a mask through Day 10.

Masking: All students, faculty, and staff are strongly encouraged to mask and observe appropriate six-foot minimum social distancing while on campus. Masks are defined as disposable single-use paper masks, cloth face coverings with ear loops or ties, balaclavas, gaiters, and bandanas that cover the nose and mouth.

Zoom behavior: [University Policy 540 Student Conduct](#) stipulates that appropriate behavior is required both in person and online. Appropriate language and attire are required on Zoom, both in lecture and break-out rooms. For additional guidance on MTSU rules, facilities, and schedules, visit [MTSU Coronavirus Response](#).

The problems listed below are chosen to help you prepare for exams. Some of the problems (mostly odd) appear in your WebAssign homework. Quiz and exam questions will be drawn from, or be very similar to, the problems listed below. Topics that are not covered in the problem list will not appear on graded activities.

SUGGESTED PROBLEMS

Material for Exam I

Section 1.1	11,14,19,26,32,34,37,40,44,46,47,51,53,55,58,60,62,67,68,75,77,79,81,85,91
Section 1.2	28,29,33,35,38,40,41,43,45,47,48,51,65
Section 1.3	3,6,7,9,12,13,15,16,18,20,21,22,24,31,33,37,38
Section 2.1	6,9,11,12,13,16,17,20,21,22,24,26,37,45,48,49,50,53,55,63,69,79,81
Section 2.2	3, 11,13,19,22,25,39,42,45,46,49,52,59,62,69,72,76,77
Section 2.3	2,10,11,17,20,23,24,27,31,34,41,43,46,47,50,51,54,61,68,70
Section 2.4	5,6,10,11,13,16,20,21,27,33,34,43,46,47,48,51,53

Material for Exam II

Section 3.1	5,12,19,21,23,26,29,37,39,40,45,49,55,58,63,66
Section 3.2	21,22,26,29,30,34,35,39,44
Section 3.3	8,12,15,25,29,33,45,55,75
Section 3.4	38,40,53,54,56,61
Section 4.1	8,14,16,25,30,35,41,44,47,48,50,53,65,68

Material for Exam III

Section 4.2	13,15,18,21,22,25,26,31,32,45,47
Section 4.3	3,4,5,8,11,15,17,21,26,27,28,30,32,36,37,39,41,47,48
Section 4.4	2,3,5,8,11,12,15,17,22,24,30,31,34,35,39,40,41,42,45,47,50,52,54,56,57,61,65,66,67,68,73,75,76
Section 4.5	1,2,3,4,5,6,8,11,13,17,19,20,25,27,29,31,32,35,36,37,38,40,42,45,48,50,54,55,71,73,75,78
Section 4.6	7,10,11,13,15,18,20,25,27,34,35,38,40,41,45,46,48,51,52,54,58,60,61
Section 4.7	2,4,5,7,9,10,11,13,14,17,19,21,22,24,26,30,33,35,37,40,42,43,47,48

Material for Exam IV

Section 5.1	1,5,8,12,13,18,23,24,26,27,32,40,42,43,46,48,50,51,54,55,58
Section 5.2	1,4,7,11,13,14,18,20,23,25,27,30,33,36,41,43,47,49,51,70,72,75,78,80,83
Section 5.3	1,6,7,10,11,13,15,19,27,30,34,37,39,45,46,48,57,58
Section 6.1	1,2,5,6,9,11,13,15,17,19,21,23,24,26,27,29,30,35,36,39,42,44,48,57,59,67,76,79
Section 6.3	1,3,4,5,8,9,11,12,15,16,20,21,23,24,26,27,29,30,35,36,39,42,44

UNIVERSITY POLICIES

DROP AND WITHDRAWAL POLICY: Please note the Drop Policy and Withdrawal Procedures as they are stated in the Current Registration Guide. A grade of "I" will be given only in accordance with University Policy. No grade of "W" will be assigned after the official drop date except in situations involving extreme extenuating circumstances beyond the student's control. In particular, a "W" will not be granted merely because the student is failing. Students should be aware that missing the official drop date and thereby receiving an "F" can have ramifications on financial aid.

Reasonable Accommodations for Students with Disabilities: Middle Tennessee State University is committed to campus access in accordance with Title II of the Americans with Disabilities Act and Section 504 of the Vocational Rehabilitation Act of 1973. Any student interested in reasonable accommodations can consult the Disability & Access Center (DAC) website www.mtsu.edu/dac and/or contact the DAC for assistance at 615-898-2783 or dacemail@mtsu.edu.

Title IX (Harrasment): If you believe you have been harrassed, discriminated against, or have been the victim of sexual assault, dating or domestic violence, or stalking, please contact a Title IX Deputy Coordinator at 615-898-2185 or 615-898-2750 or visit <http://www.mtsu.edu/titleix/> for resources. As a faculty member, I am legally obligated to share reports of such incidents with the MTSU Title IX coordinator.

LOTTERY STATEMENT: To retain the Tennessee Education Lottery Scholarship eligibility, you must earn a cumulative TELS GPA of 2.75 after 24 and 48 attempted hours and a cumulative TELS GPA of 3.0 thereafter. A grade of C, D, F, FA, or I in this class may negatively impact TELS eligibility. If you drop this class, withdraw, or if you stop attending this class you may lose eligibility for your lottery scholarship, and you will not be able to regain eligibility at a later time. For additional Lottery rules, please refer to your Lottery Statement of Understanding form (<http://www.mtsu.edu/financial-aid/forms/LOTFEV.pdf>) or contact your MT One Stop Enrollment Coordinator (<http://www.mtsu.edu/one-stop/counselor.php>).

ACADEMIC MISCONDUCT: Middle Tennessee State University takes a strong stance against academic misconduct. Academic Misconduct includes, but is not limited to, plagiarism, cheating, and fabrication. Plagiarism, cheating, fabrication, or facilitating any such act. For purposes of this section, the following definitions apply:

1. **Plagiarism:** The adoption or reproduction of ideas, words, statements, images, or works of another person as one's own without proper attribution. This includes self-plagiarism, which occurs when an author submits material or research from a previous academic exercise to satisfy the requirements of another exercise and uses it without proper citation of its reuse.
2. **Cheating:** Using or attempting to use unauthorized materials, information, or study aids in any academic exercise. This includes unapproved collaboration, which occurs when a student works with others on an academic exercise without the express permission of the professor. The term academic exercise includes all forms of work submitted for credit or hours.
3. **Fabrication:** Unauthorized falsification or invention of any information or citation in an academic exercise.

Going online and taking information without proper citations, copying parts of other student's work, creating information for the purposes of making your paper seem more official, or anything involving taking someone else's thoughts or ideas without proper attribution is **academic misconduct**. If you work together on an assignment when it is not allowed, it is **academic misconduct**. If you have a question about an assignment, please come see me to clarify. Any cases of academic misconduct will be reported to the Office of Academic Affairs for violating the academic honesty requirements in the student handbook. They will also result in failure for the course. Remember – ignorance is NOT a defense.

Classroom Misconduct: The instructor has the primary responsibility for maintenance of academic integrity and controlling classroom behavior, and can order the temporary removal or exclusion from the classroom of any student engaged in disruptive conduct or conduct that violates the general policies of the Institution for each class session during which the conduct occurs. Extended or permanent exclusion from the classroom, beyond the session in which the conduct occurred, or further disciplinary action can be effected only through appropriate procedures of the Institution. If an instructor wishes to remove a student from the classroom for a longer period of time or permanently, he/she must refer the student to the Office of Judicial Affairs and Mediation Services.

Disruptive behavior in the classroom may be defined as, but not limited to, behavior that obstructs or disrupts the learning environment (e.g., offensive language, harassment of students and professors, repeated outbursts from a student which disrupts the flow of instruction or prevents concentration on the subject taught, failure to cooperate in maintaining classroom decorum, etc.), text messaging, and the continued use of any electronic or other noise or light emitting device which disturbs others (e.g., disturbing noises from beepers, cell phones, palm pilots, lap-top computers, games, etc.).

Please note that the rules of proper conduct still apply to Zoom sessions. The norms that apply in face-to-face conversations also apply to Zoom sessions. Use acceptable viewing angles and do not have offensive material in your background --- failure to do so could leave you open to harassment complaints and possible legal action.