Syllabus for MAT-3210

Linear Algebra

Course Description

This course provides the basics and applications of matrix theory and linear algebra. Emphasis is given to topics that will be useful in other disciplines, including vector spaces, linear transformations, inner products, matrix representations, binary and quadratic forms, eigenvectors, and functions of matrices.

Topics

- Matrices
- Systems of Equations
- Determinants
- Vector Spaces
- Linear Transformations
- Orthogonality
- Eigenvalues

Course Objectives

After completing this course, you should be able to:

CO 1 Solve systems of linear equations.

CO 2 Convert a system of linear equations into a matrix.

CO 3 Perform algebraic operations with matrices.

Copyright © 2026 by Thomas Edison State University. All rights reserved.

CO 4 Compute the determinant of a matrix.

CO 5 Utilize vector spaces to illustrate linear independence.

CO 6 Apply the rules of vectors to show levels of dimension, basis, and space.

CO 7 Solve linear transformation problems.

CO 8 Compute scalar products, subspaces, least squares, inner products, orthonormal sets and polynomials.

CO 9 Utilize eigenvectors to compute systems of linear differential equations, diagonalization and hermitian matrices.

CO 10 Utilize matrices and vectors to calculate quadratic equations.

Study Materials

You will need the following materials to complete your coursework. Some course materials may be free, open source, or available from other providers. You can access free or open-source materials by clicking the links provided below or in the module details documents. Please visit the following website to purchase course materials: University's textbook supplier

Required Textbook(s)

- Larson, Ron (2017). *Elementary Linear Algebra* (8th ed.). Boston, MA: Brooks/Cole, Cengage Learning.
  ISBN-13: 978-1305658004

- Larson, Ron (2017). *Student Solutions Manual for Elementary Linear Algebra* (8th ed.). Boston, MA: Brooks/Cole, Cengage Learning.
  ISBN-13: 978-1305658028

- The author of the textbook also provides fully worked-out solutions to

Copyright © 2026 by Thomas Edison State University. All rights reserved.

odd-numbered exercises at his site: CalcChat.com.

Course Structure

Linear Algebra is a 3-credit, online course consisting of 5 modules. Modules include an overview, topics, learning objectives, study materials, and activities. Module titles are listed below.

- **Module 1: Systems of Equations and Matrices**
- **Module 2: Determinants and Vector Spaces**
- **Module 3: Inner Product Spaces**
- **Module 4: Linear Transformations**
- **Module 5: Eigenvalues and Eigenvectors**

Assessment Methods

You are required to participate in the following for formal work in the course:

- Write online discussion forum posts
- Complete written assignments
- Take a proctored midterm exam
- Take a proctored final exam

See below for details.

Consult the Course Calendar for due dates.

Copyright © 2026 by Thomas Edison State University. All rights reserved.

Promoting Originality

One or more of your course activities may utilize a tool designed to promote original work and evaluate your submissions for plagiarism. More information about this tool is available in this Plagiarism Detection Tool Google document.

Discussion Forums

You are required to complete **5** discussion forums. The discussion forums are on a variety of topics based on the course modules. There is also an ungraded but required introduction forum in Module 1.

Written Assignments

You are required to complete **5** written assignments. The written assignments draw on even-numbered exercises from the textbook. For each assignment, answer all assigned exercises, and show all work.

Assignments must be prepared electronically with a word processor, preferably using whatever equation editor comes with your word processing software. However, if your word processor is not compatible with your mentor's word processor, you will need to save your document as a rich-text file (.rtf) before submitting it. Check with your mentor first to determine file compatibility. (Important: Use the equation editor to insert equations into your word-processed document, not to create the document itself.)

When preparing your answers, please identify each exercise clearly by textbook section and exercise number. Be sure to include your name at the top of the paper, as well as the course name and code and the semester and year in which you are enrolled. To receive full credit for your answers, you must show all work and include complete solutions.

Examinations

You are required to take **2** proctored online examinations: a midterm exam and a final exam. Both exams require that you use the University's Online Proctor Service (OPS). Please refer to the "Examinations and Proctors" section of the Online Student

Copyright © 2026 by Thomas Edison State University. All rights reserved.

Handbook (see Student Handbooks in the General Information area of the course website) for further information about scheduling and taking online exams and for all exam policies and procedures.

You are strongly advised to schedule your exam within the first week of the semester.

Online exams are administered through the course website. Consult the Course Calendar for the official dates of exam weeks.

Ungraded practice exams for the midterm and final exam are available. Since these practice exams contain questions that are similar to those that you will see on the graded exams, they should serve as an effective way to prepare for the exams. In the Examinations section of the course Web site, click on the Practice Midterm Exam link or the Practice Final Exam link to begin.

Midterm Examination

The midterm exam is two hours long and covers modules 1 to 2 of the course (textbook chapters 1 through 4). It consists of 21 multiple-choice questions.

The exam is open book, but **not** open notes. In this regard you are permitted to use only the authorized textbook. You are not allowed to consult a solutions manual, notes of any kind (including graded or ungraded activities), or any other reference sources or sources of information. The use of blank scratch paper for doing math calculations is permitted during online test administrations.

Note*:* You are permitted to use a calculator (scientific, graphing, or financial) but ***may not*** use a calculator on a phone, PDA, or any similar device.

Final Examination

The final exam is two hours long and covers all modules from 1 through 5 of the course. The final exam will focus more on the topics discussed in modules 3, 4, and 5. The final exam consists of 22 multiple-choice questions.

The final exam is also open book, but **not** open notes. In this regard you are permitted

Copyright © 2026 by Thomas Edison State University. All rights reserved.

to use only the authorized textbook. You are not allowed to consult a solutions manual, notes of any kind (including graded or ungraded activities), or any other reference sources or sources of information. The use of blank scratch paper for doing math calculations is permitted during online test administrations.

Note*:* You are permitted to use a calculator (scientific, graphing, or financial) but ***may not*** use a calculator on a phone, PDA, or any similar device.

Statement About Cheating

You are on your honor not to cheat during the exam. Cheating means:

- Looking up any answer or part of an answer in an unauthorized textbook or on the Internet, or using any other source to find the answer.
- Copying and pasting or in any way copying responses or parts of responses from any other source into your online test. This includes but is not limited to copying and pasting from other documents or spreadsheets, whether written by yourself or anyone else.
- Plagiarizing answers.
- Asking anyone else to assist you by whatever means available while you take the exam.
- Copying any part of the exam to share with other students.
- Telling your mentor that you need another attempt at the exam because your connection to the Internet was interrupted when that is not true.

The exam will be made invalid and you will fail the course if there is evidence that you have cheated or plagiarized in your exam.

Copyright © 2026 by Thomas Edison State University. All rights reserved.

Grading and Evaluation

Your grade in the course will be determined as follows:

- **5 online discussions** are worth **20% of your final grade.**
- **5 written assignments** are worth **30% of your final grade.**
- A proctored **Midterm exam** is worth **25% of your final grade.**
- A proctored **Final exam** is worth **25% of your final grade.**

All activities will receive a numerical grade of 0–100. You will receive a score of 0 for any work not submitted. Your final grade in the course will be a letter grade. Letter grade equivalents for numerical grades are as follows:

- **A** is **93 to 100**
- **A minus** is **90 to 92**
- **B plus** is **88 to 89**
- **B** is **83 to 87**
- **B minus** is **80 to 82**
- **C plus** is **78 to 79**
- **C** is **73 to 77**
- **C minus** is **70 to 72**
- **D** is **60 to 69**
- **F** is **any grade below a 60**

To receive credit for the course, you must earn a letter grade of C or better (for an area of study course) or D or better (for a course not in your area of study), based on the weighted average of all assigned course work (e.g., exams, assignments, discussion postings).

Strategies for Success

First Steps to Success

To succeed in this course, take the following first steps:

Copyright © 2026 by Thomas Edison State University. All rights reserved.

- Read carefully the entire syllabus, making sure that all aspects of the course are clear to you and that you have all the materials required for the course.

- Take time to read the entire Student Handbook. The Handbook answers many questions about how to proceed through the course, how to schedule exams, and how to get the most from your educational experience at Thomas Edison State University.

- Arrange to take your examination(s) by following the instructions in this Syllabus and the Student Handbook.

- Familiarize yourself with the learning management systems environment—how to navigate it and what the various course areas contain. If you know what to expect as you navigate the course, you can better pace yourself and complete the work on time.

- If you are not familiar with web-based learning be sure to review the processes for posting responses online and submitting assignments before class begins.

Study Tips

Consider the following study tips for success:

- To stay on track throughout the course, begin each week by consulting the Course Calendar. The Course Calendar provides an overview of the course and indicates due dates for submitting assignments, posting discussions, and submitting the final project.

- Check Announcements regularly for new course information.

Using AI Ethically: A Guide for TESU Students

TESU's Academic Code of Conduct permits student AI use in support of their writing and research process--not as a replacement for original writing.

Copyright © 2026 by Thomas Edison State University. All rights reserved.

Document AI use with an acknowledgment statement at the end of each assignment, noting the tools and prompts used. Cite any AI-generated content on the References page.

Please review Using AI Ethically: A Guide for TESU Students for more detailed information.

Commitment to Diversity, Equity, and Inclusion

Thomas Edison State University recognizes, values, and relies upon the diversity of our community. We strive to provide equitable, inclusive learning experiences that embrace our students' backgrounds, identities, experiences, abilities, and expertise.

Accessibility and Accomodations

Thomas Edison State University adheres to the Americans with Disabilities Act (ADA, 1990 and ADAAA, 2008) and Section 504 of the Rehabilitation Act of 1973.

The Office of Student Accessibility Services (OSAS) oversees requests for academic accommodations related to disabilities, including:

- A student who is pregnant, postpartum, or parenting a newborn who is not the birth parent [as covered under NJSA18A].
- Students requesting academic accommodation for a short-term or temporary illness.
- TESU students requesting academic accommodation for an injury.

Information can be found on the Office of Student Accessibility Services webpage.

Questions can be sent to ADA@tesu.edu.

Copyright © 2026 by Thomas Edison State University. All rights reserved.

Academic Policies

Familiarize yourself with all administrative and academic policies, including those related to the following list, to ensure success in all your academic endeavors and coursework at Thomas Edison State University:

- Academic integrity
- Course late submissions
- Extensions for the course
- Grading policies

For more, see:

- University-wide policies
- Undergraduate academic policies
- Undergraduate course policies
- Graduate academic policies
- Graduate course policies
- Nursing student policies
- Nursing graduate student policies
- International student policies
- Academic code of conduct

Copyright © 2026 by Thomas Edison State University. All rights reserved.