Math 343: Elementary Linear Algebra

Fall 2025 – Section 1

Class meeting: M, W, F: 1 - 1:50 PM at SCB 303
Instructor: Dr. Tuan Pham
Email: tpham@byuh.edu
Office: SCB 316, telephone: 808-675-3044
Office hours: M, F 2:00 - 3:30 PM or by appointment
Canvas: https://byuh.instructure.com/courses/1482090
Course website: https://web.engr.oregonstate.edu/~phamt3/Courses/F25-Math-343
Prerequisite: Math 119 or Math 212.
Credit hours: This 3-credit hour course approximates one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately 14 weeks.
Textbook: "*Linear Algebra and its applications*", 6th Edition by David Lay, Steven Lay, and Judi McDonald. Pearson's MyLab Math access is required. You can sign up through Canvas.

This class will be participating in Inclusive Access this semester. "Inclusive Access" is the course content solution that is giving you access to the eBook and/or course materials on the first day of school at a lower price. To access the eBook and/or course materials, go to Canvas, click on VitalSource Bookshelf. From there you are able to access the eBook and/or coursework. If you have already purchased your book and don't need access to the eBook and/or coursework, please be sure to opt out. The deadline to opt-out and avoid your student account being charged is 14 days after the first day of school, after which refunds will not be provided. This charge will be listed on your student account as a "digital fee" with the course name. The price of your course materials will sent to you directly in a separate email. If you have any questions or concerns, regarding Inclusive Access, please contact the textbook manager at textbooks@byuh.edu.

Course description: This course covers linear systems, matrices, vectors and vector spaces, linear transformations, determinants, quadratic forms, eigenvalues, and eigenvectors.

Learning Outcomes: Upon successful completion of this class, a student will be able to:

1. Develop proficiency in problem-solving and understanding of proofs within the context of linear algebra;
2. Strengthen students' foundational knowledge in algebra and its application in linear algebra;
3. Expand content knowledge in linear algebra, focusing on understanding definitions, theorems, and concepts;
4. Demonstrate problem-solving steps in a logical and coherent manner when working with linear algebra problems;
5. Write solutions to linear algebra problems in a logical and cohesive manner; develop oral explanations that aid in successful communication of concepts;
6. Utilize calculators and desktop software for writing mathematics to assist in solving problems related to linear algebra;
7. Apply linear algebra concepts and techniques to solve problems in various fields, including computer science, physics, and engineering;
8. Prepare students for future decisions regarding graduate school, employment, or other opportunities by providing a strong foundation in linear algebra.

Course goals: The Math Department has established eight outcomes for graduating mathematics majors. The table below indicates which outcomes will be addressed in Math 343.

Program L.O.	Where/When addressed	Institutional L.O.
Demonstrate proficiency in Algebra and Trigonometry necessary for success in Advanced mathematical studies. [low priority]	Some homework problems and exams require the use of algebra and trigonometry and proofs	Knowledge, Analysis
Demonstrate proficiency in Differential, Integral, and Multivariable Calculus necessary for success in Advanced mathematical studies. [low priority]	Some homework problems and exams require the use of calculus and multivariable calculus concepts	Knowledge, Analysis
Demonstrate content knowledge of both abstract and applied mathematical disciplines by stating definitions, salient theorems, and proofs of major theorems and concepts that are core content in upper division courses. [high priority]	Learning and applying definitions and theorems associated with Linear Algebra will be expected throughout the course	Knowledge, Inquiry, Analysis
Organize and explain their knowledge of logic and mathematical content in the structure of original valid proofs. [medium priority]	Proofs will be expected on class exams and homework assignments	Analysis, Communication
Communicate mathematical ideas effectively in both written and oral context. [medium priority]	The course will have some focus on written proofs on exams. Students will discuss problems orally in the classroom setting.	Communication
Apply major definitions, theorems and algorithms in problem solving. [medium priority]	Students will focus on applications of linear algebra.	Knowledge, Analysis
Use appropriate technological tools while solving mathematical problems. [medium priority]	Application of computer and/or calculators for solving systems of equations and reducing matrices will be particularly important in the course.	Knowledge, Analysis
Prepare professionally for graduate school or employment in mathematics or related fields. [low priority]	This is an introductory upper division course building skills which are particularly useful in mathematics related fields.	Inquiry, Service, Stewardship

Grading components:

Homework: 25%
Attendance: 5%
In-class quizzes: 15%
Labs: 10%
Midterm I, Midterm II, Final exam: 15% each
There will be opportunities for extra credit during the course.

Evaluation:

- **Homework**: all homework assignments are given (and automatically graded) through MyLab Math. They are to be finished by the posted dates on MyLab Math. You may redo homework

questions as many times as you want until perfect before the due date. You will lose 20% of the score per day on the questions scored after the due date.

- **Attendance**: after the Add deadline, the instructor will check attendance every day of class.
- **In-class quizzes**: quizzes will be given in class each Friday. These quizzes are to test students' understanding of recent topics.
- **Labs**: we will be using Python on the coding space called Google Colab for programming. The labs help you understand algorithms and practice implementing them on the computer.
- **Exams:** there will be two midterm exams and one final exam. Each exam will be done in class through MyLab Math. You must bring a laptop. See the class schedule for the dates of those exams. Links to access each exam can be found on the home page of the course on Canvas.

Use of Artificial Intelligence (AI): in this course, the use of AI tools for learning is permitted. It is a good practice that you ask AI for the general procedure to solve a problem, for example: "How do I check if a given set of vectors is linearly independent?" In most cases, it is a bad practice to have AI solve a homework problem for you before you have spent an intensive effort. You must not have AI solve the entire homework set for you. Such a practice is considered as cheating and you may receive a score of zero. Keep in mind that you are not allowed to use AI in any proctored test (in-class quizzes and exams).

Make-up work and due-date extension: make-up exams will be given only in exceptional circumstances, with appropriate documentation, such as illness or family emergency. If possible, notify the professor as soon as you are aware of the issue. Extension of due dates for assignments may be considered under similar conditions.

Grade lines: the course grade lines will not be harder than the standard grade lines: A 100-93%, A- 92.99-90%, B+ 89.99-87%, B 86.99-83%, B- 82.99-80%, C+ 79.99 - 77%, C 76.99-73%, C- 72.99-70%, D+ 69.99-67%, D 66.99-63%, D- 62.99 - 60% and F $<$ 60%.

Other Learning Resources:

- The instructor has office hours dedicated to help you. Don't hesitate to make an appointment if the office hours conflict with your schedule.
- Your fellow classmates are also a good resource. Form a study group and you will find it helpful.
- You can find peer tutors at the Math Lab, located in SCB 302. Online tutoring is also available. Check out their hours here: https://mc.byuh.edu/math-lab.

Student Academic Grievance policy:
Students, who feel that their work has been unfairly or inadequately evaluated by an instructor, are encouraged to pursue the matter as an Academic Grievance by following the steps found in the Academic Grievance policy at https://catalog.byuh.edu/policies-procedures/grievances.

Final Exam Schedules: Final exams are to be offered on the specific day and time as determined by the official final exam schedule. Students must plan travel, family visits, etc., in a way that will not interfere with their final exams. Less expensive air fares, more convenient travel arrangements, family events or activities, and any other non-emergency reasons are not considered justification for early or late final exams.

Honor Code: The Honor Code exists to provide an education in an atmosphere consistent with the ideals and principles of the Church of Jesus Christ of Latter-day Saints. Students, faculty and staff are expected to maintain the highest standards of honor, integrity, morality, and consideration of others in personal behavior. Academic honesty and dress and grooming standards are to be maintained at all times on and off campus. For specific information see http://honorcode.byuh.edu.

Discrimination: The University is committed to a policy of nondiscrimination on the basis of race, color, sex, pregnancy, religion, national origin, age, disability, genetic information or veteran status in admissions, employment or in any of its educational programs or activities. For specific information see the non-discrimination policy at https://policies.byuh.edu.

Title IX and Sexual Misconduct: The University will not tolerate any actions proscribed under Title IX legislation, specifically sexual harassment, sexual violence, domestic or dating violence or stalking perpetrated by or against any university students, university employees or participants in university programs. For specific information see https://titleix.byuh.edu. All faculty and staff are deemed responsible reporting parties and as such mandated to report incidents of sexual misconduct including sexual assault to the Title IX.

```
Title IX Office
Lorenzo Snow Administrative Building
55-220 Kulanui St.
Laie, HI  96762
Office Phone: (808) 675-4585
E-Mail: titleix@byuh.edu
```

Accommodating Students with Disabilities: Disability Services is dedicated to assisting students with disabilities by providing opportunities for success and equal access at Brigham Young University-Hawaii. We are committed to coordinating reasonable accommodations as outlined by Federal and State law. To learn more about available supports, go to https://disability.byuh.edu, call (808) 675-3518 or go to McKay Building 181 across from the Cafeteria. You may also email disabilityservices@byuh.edu with questions. For Canvas Accessibility Issues, please fill out this online form https://titanium.byuh.edu/Titanium_Disability_Intake.

Mental Health Resources: As a college student, there may be times when personal stressors interfere with your academic performance and/or negatively impact your daily life. If you or someone you know is experiencing mental health challenges at BYUH, please contact Counseling Services at (808) 675-3518. Services are free and confidential. For more information, visit https://counseling.byuh.edu/. Free mental health self-help resources are available through TAO Connect. To access them, simply go to https://us.taoconnect.org/register and sign in using your BYUH email address. In a crisis situation, or after hours, please contact BYUH Campus Safety at (808) 675-3911 or call 911 if you are off campus. You can also call the 24-hour crisis hotline at 1-800-753-6879 or contact the Crisis Text Line at 741-741.

Report a Concern: If you have a concern to report go to http://about.byuh.edu/reportaconcern. If you have reason to believe a student or dependent of a student is a danger to self or others please do one of the following depending on the urgency of the situation:

a. Call 911,

b. Call BYU-H Public Safety (675-3911),

c. Report a concern to the Behavior Intervention Team.