Math 313 Elementary Linear Algebra Syllabus

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Course Information

Material

Item	Vendor	Price (new)	Price (used)
ELEMENTARY LINEAR ALGEBRA 10E *Required* by H, ANTON, Edition 10 ISBN: 9780470458211	BYU Bookstore	$181.35	$136.05

Learning Outcomes

Linear systems, matrices, vectors and vector spaces, etc.
This course is aimed at majors in mathematics, the physical sciences, engineering, and other students interested in applications of mathematics to their disciplines. Linear algebra is used more than any other form of advanced mathematics in industry and science. A key idea is the mathematical modeling of a problem via systems of linear equations. For more detailed information visit the Math 313 Wiki page.

Grading Scale

Grade	Points
A	930 to 1000 points
A-	900 to 929 points
B+	870 to 899 points
B	830 to 869 points
B-	800 to 829 points
C+	770 to 799 points
C	730 to 769 points
C-	700 to 729 points
D+	670 to 699 points
D	630 to 669 points

D-	600 to 629 points
E	0 to 599 points

Grading Policy

Scores for all assignments and exams will be posted on Learning Suite. These can be easily interpreted.

- •450 points possible for midterms (150 points each)
- •250 points for the final
- •200 points for homework
- •100 points for reading quizzes

Each of the 35 homework assignments will be worth 6 points, the sum of which being 210. Thus, there is the opportunity for extra credit.

Additionally, each of the 40 quizzes will be worth 3 points, the sum of which being 120. Thus, there is the opportunity for extra credit once again.

This is very generous. Please do not ask for any leniency.

Exams

There will be three exams taken in the testing center. Each of these exams will be worth 15% of your grade, for a total of 45%. The midterms are not timed and may take 3 hours each. No calculators will used on these midterms or on the final exam.

Final Exam

The final exam will be worth 25% of your grade. It will be 3 hours and held in 112 TMCB. It is cumulative.

Homework

Homework will be worth 20% of your grade. Homework should be turned in by 5pm in the math lab on the day indicated on the calendar. It can also be picked up there within a couple days. **Late homework will not be accepted**.

Reading Quizzes

Reading Quizzes will be worth 10% of your grade. They will be available on Learning Suite and will have deadlines insuring that you **read before class** the material to be lectured on. They are open book and you will have 15 minutes to complete them. They are due by 10am the morning of class.

General Considerations for non-Mathematics Majors

This course should be viewed similar to the way one typically views a course in English, Social Science, History, or any other course where synthesis of complex ideas into readable prose is routinely expected. The fact that our general discipline (Mathematics) and specific subject (Linear Algebra) are vastly less ambiguous and subjective than many others only makes the need for precise, convincing communication even more important. While some of this communication should be in the form of specialized mathematical symbols, a large fraction of it should be in the standard form generally used by the average educated person - English sentences with all of their

essential and defining components. Before you turn in your homework, you should be able to read it out loud and confirm that a person who can only hear your voice, but who is otherwise attentive, can understand your development of thought. In this way, you can assure that everything you write, with or without specialized symbols, is part of a complete idea and a complete sentence. On a more mundane note, your homework and test scores will be reduced if not approached in this "complete sentence" format. **It is a requirement of this course that you think and, thus, that you write**.

Calculators

Calculators can be used to check your Homework. However, work must be shown on homework to get any credit. "Showing work" means, among other things, constructing complete ideas and sentences.

Studying Mathematics at the University

Dr. Lynn E. Garner, Former Chair, Department of Mathematics, Brigham Young University

Brigham Young said, "Education is the power to think clearly, the power to act well in the world's work, and the power to appreciate life." Mathematics and quantitative reasoning are fundamental to these three powers, especially in our technological world in which reality is described in increasingly mathematical terms.

The goals of university mathematics courses are not only to develop manipulative skills in arithmetic, algebra, etc., but also to impart an understanding of mathematical ideas in new contexts and with much more flexibility. For example, most of you expect to use mathematics as a fundamental tool. The power to use mathematics effectively in your discipline requires you to have
•a conceptual understanding of both mathematical principles and the principles of your discipline,
•the ability to translate features of your discipline into a mathematical model,
•the knowledge and skill to apply mathematics to the model, and
•the ability to express the mathematical results as predictions in the discipline.

As you see, manipulative skills are necessary but inadequate without conceptual understanding, and this is true in any major. If you wish to study mathematics itself, the expectation is that you will not only master the knowledge and skills of the mathematics courses, but also learn to communicate in mathematical terms. The language and theory of proof will become critically important to you.

Attitudes toward learning in mathematics courses must be consistent with these goals. In high school, most learning took place in the classroom and students usually didn't spend as much time on homework as in class. One who was attentive in class could usually succeed with modest effort. At the university, most of your learning will take place outside the classroom and you will be expected to spend at least twice as much time on homework and reading as you spend in class. In addition to being attentive in class, you will have to exert considerable effort outside of class in order to succeed. You will be expected to learn the basic ideas in a course from the textbook because there is typically not enough time to cover all of them in class. And, given this change in the location of learning activities, it is obvious that your instructor is no longer primarily responsible for what you learn; you are. Finally, go beyond solving problems like the examples in your text. The problems you will meet on the job have not yet been solved and are not in the

textbooks. If all you can do is solve text problems, you will be replaced by a computer. Practice solving problems you have not seen before. Learn to think; that, a computer cannot do.

Taking responsibility for your own learning includes gathering pertinent information, enhancing the learning environment, being committed to academic integrity, and using responsibly the exceptions afforded by extenuating circumstances.
•You are responsible to know all the requirements in your major, your minor, the university generally, and every course you take. Verify advice from anyone else with authoritative sources: your instructor, the syllabus, the textbook, or your advisement center. Ignorance is never an excuse. Exert every effort to master the material of each course. Strive for excellence. You can study harder than you now know.
•Your actions should enhance the learning environment. Avoid distracting activities in the classroom, the library, and the dormitory. Always prepare for class by completing homework and reading assignments.
•Academic integrity means that you will not allow yourself or others to profit from information to which you or they have no right. Not only do you avoid plagiarism, but you do not receive or give inappropriate information about tests, quizzes, or homework. Grades are given only on the basis of academic performance; to ask for grades on any other basis is a form of academic dishonesty.
•Extenuating circumstances include serious illness, family emergency, and official university business. Instructors usually allow you to make up work missed because of extenuating circumstances, but do not expect heroic efforts in your behalf; some activities can't be made up. Arrange ahead of time or as soon as possible afterward. The timing of an extenuating circumstance may be critical, so act quickly.

Strategies for learning in mathematics courses include
•managing your time, now your most precious resource, by observing and adjusting your use of it;
•making sure you are in the appropriate class and have the proper prerequisites;
•studying with classmates, teaching each other the principles involved and discussing difficult concepts;
•getting help after reasonable effort, without wasting too much time "spinning your wheels;"
•being willing to review on your own time topics you have seen but have forgotten;
•using instructor office hours and the Math Lab effectively;
•reading the textbook for basic ideas, additional information, and more examples; and
•Making efficient and responsible use of the library and technology.

University Policy

Honor Code

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university's expectation, and my own expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

Sexual Harassment

Title IX of the Education Amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds. The act is intended to eliminate sex discrimination in education and pertains to admissions, academic and athletic programs, and university-sponsored activities. Title IX also prohibits sexual harassment of students by university employees, other students, and visitors to campus. If you encounter sexual harassment or gender-based discrimination, please talk to your professor or contact one of the following: the Title IX Coordinator at 801-422-2130; the Honor Code Office at 801-422-2847; the Equal Employment Office at 801-422-5895; or Ethics Point at http://www.ethicspoint.com, or 1-888-238-1062 (24-hours).

Student Disability

Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. If you have any disability which may impair your ability to complete this course successfully, please contact the University Accessibility Center (UAC), 2170 WSC or 422-2767. Reasonable academic accommodations are reviewed for all students who have qualified, documented disabilities. The UAC can also assess students for learning, attention, and emotional concerns. Services are coordinated with the student and instructor by the UAC. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures by contacting the Equal Employment Office at 422-5895, D-285 ASB.

Respectful Environment

"Sadly, from time to time, we do hear reports of those who are at best insensitive and at worst insulting in their comments to and about others... We hear derogatory and sometimes even defamatory comments about those with different political, athletic, or ethnic views or experiences. Such behavior is completely out of place at BYU, and I enlist the aid of all to monitor carefully and, if necessary, correct any such that might occur here, however inadvert or unintentional. "I worry particularly about demeaning comments made about the career or major choices of women or men either directly or about members of the BYU community generally. We must remember that personal agency is a fundamental principle and that none of us has the right or option to criticize the lawful choices of another." President Cecil O. Samuelson, Annual University Conference, August 24, 2010 "Occasionally, we ... hear reports that our female faculty feel disrespected, especially by students, for choosing to work at BYU, even though each one has been approved by the BYU Board of Trustees. Brothers and sisters, these things ought not to be. Not here. Not at a university that shares a constitution with the School of the Prophets." Vice President John S. Tanner, Annual University Conference, August 24, 2010