Math 213: Elementary Linear Algebra

Fall 2020

(Section 10)

Instructor: Tuan Pham
Course Credits: 2
Time and Location: 4:00 - 4:50 PM on Tuesday and Thursday at TMCB 159.
Email: tuan.pham@mathematics.byu.edu
Couse website:
http://math.byu.edu/~tpham/Courses/F20-Math-213/F20-Math-213.html
Learning Suite:
https://learningsuite.byu.edu/.M-Th/cid-8BKAFw4ffl4y/home/
Office: TMCB 367, **phone:** 801-422-7873
Office Hours: held on Zoom on MWF 11:30 - 1:00 PM and TTh 2:00 - 3:30 PM with

Meeting ID: **442 950 6864**
Password: 12345

Textbook: "*Linear Algebra – A Modern Introduction*", 4th Edition, by David Poole. **Do not purchase the textbook!** We have negotiated a special price with the publisher for access to both the online ebook and the online homework system WebAssign. You will be given immediate access to the ebook through WebAssign (see below for instructions on enrolling in WebAssign). You will automatically be charged $70.75 through your university student financial account for the ebook and WebAssign access after the add/drop deadline, unless you opt out.

Other Learning Resources:

1. We have a TA (shared with other sections of Math 213). His name is Joseph Henderson. He holds office hours on Zoom with link https://byu.zoom.us/j/4044008726 on the following days and time:

   - Tuesday 11:30 – 1:30 PM and 3:30 – 5:30 PM,
   - Thursday 11:30 – 1:15 PM and 3:30 – 5:30 PM,
   - Friday 1 – 5 PM.

2. Math Lab is open for online and in-person service. You can ask questions or request tutoring there. Please check out this website to know how: https://math.byu.edu/?page_id=193.

3. If you would like to interact with other students taking the same class (maybe from different sections), please go to this website: piazza.com/byu/fall2020/math213 and enroll yourself as a student.

Course Description: Students will be introduced to Linear Algebra – a useful mathematical tool to model many real-life problems. Real-life problems often demand a large quantity of computations. Students will see that a large amount of algebraic computations can often be done *simultaneously* through a systematic procedure called matrix operations. Students will learn, to some extent, how to use Linear Algebra to solve systems of equations, optimization problems (i.e. finding mininum or maximum), identify "principal" directions of a geometric transformation, and more. This course is suitable for all who are interested in science, engineer, or economics. The prerequisite is Math 112.

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

1. Understand the concept of vectors, lines, planes and higher dimensional vector spaces.
2. Solve systems of linear equations.
3. Perform basic operations on matrices: compute addition, subtraction, multiplication, inversion, determinant, eigenvectors and eigenvalues.
4. Find an orthogonal basis of a vector space using Gram-Schmidt procedure. Apply it to solve certain optimization problems.
5. Perform singular value decomposition.

Grading:
Online homework: 10%
Written homework: 25%
Midterm 1: 20%
Midterm 2: 20%
Final Exam: 25%

Online homework: due at 11:59 PM on WebAssign almost every Tuesday and Thursday. A schedule of online homework assignments was posted on WebAssign. To assign enroll yourself to WebAssign, go to webassign.net, then click on 'Enter class key', then enter the following code:

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Policy: These assignments are strictly multiple choice. For each assignment set, a student can submit a maximum number of 20 times. The lowest score will be dropped.

Written homework: due at 11:59 PM on Gradescope almost every Wednesday and Friday. A schedule of written homework assignments was posted on the course website and Learning Suite.
Policy: Homework must be submitted on Gradescope. You can work on their own paper, then take a picture (making sure that your name is readable) and upload it on Gradescope. Typing would be great, but not required. Students are encouraged to work together. However, homework must be written individually in your own words and reflect your own understanding.

Each homework set is worth 30 points. The lowest three scores will be dropped. Only a few selected problems will be graded in detail. The rest will be given credit based on completion. There will be a bonus problem to some homework sets, given during the course, that helps students earn extra points. The bonus problem is always graded.

If you experience extended illness, injury, hospitalization, or other major disruption during the semester and cannot complete your work please speak to your instructor. Special accommodations may be able to be arranged on a case by case basis.
Requirements for written work: to obtain full credit for your work, you must write coherently, in complete sentences, with attention to your audience.

Midterm Exam: there will be two midterm exams submitted through Gradescope.

- Midterm 1: Oct 7 – 9
- Midterm 2: Nov 11 – 13

Policy: Calculators are not allowed.

Final exam: Dec 12 – 17, submitted through Gradescope.
Policy: Final exam is comprehensive.

Grade lines: the course grades will not be harder than: A 100-90%, B 89-80%, C 79-70%, D 69-60%, and F 59% and under.

Preventing 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; contact the Equal Employment Office at 801-422-5895 or 1-888-238-1062 (24-hours), or http://www.ethicspoint.com; or contact the Honor Code office at 801-422-2847.

Students with Disabilities: BYU is committed to providing reasonable accommodation to qualified persons with disabilities. If you have any disability that may adversely affect your success in this course, please contact the University Accessibility Center at 422-2767. Services deemed appropriate will be coordinated with the student and instructor by that office.