

Math 4242 Applied Linear Algebra

Spring 2017

Instructor: Peter Webb
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Course Site: <http://www.math.umn.edu/~webb>
Office Hours: 11:15-12:05 MWF or by appointment.
Text: Peter J. Olver and Chehrzad Shakiban, Applied Linear Algebra. Book web page: <http://www-users.math.umn.edu/~olver/ala.html>

Course Content

This is a second, advanced course in Linear Algebra that assumes the student has already mastered a one semester course in the subject. In this course, systems of linear equations, Gaussian elimination, determinants, vector spaces, linear independence, basis and dimension will be only briefly reviewed.

New topics will include the Cramer's rule, the row, column spaces, linear transformations, inner product, orthogonality, the Gram-Schmidt algorithm, eigenvalues and eigenvectors, diagonalization, hermitian matrices, the singular value decomposition, quadratic forms, positive definite matrices, and the Jordan canonical forms. The lectures follow the text fairly closely.

Course Assessment

There will be two full-period mid-term exams, to be held on **Friday March 3** and **Friday April 21**. The final exam will be held at the scheduled time determined by the university, which is **1:30-3:30 pm Saturday, May 13, 2017**. The final exam will probably not be held in our usual classroom, and it will be on all the material we have studied.

You will also have homework and quizzes. Your final grade will be made up of homework 15% and quizzes 10%, mid-term exams 20% each, final exam 35%.

Homework and Quizzes

Homework will be due on Fridays, starting January 27, either in class or in my mail box by 2:30pm on Friday. Late homework will not be accepted. I will assign a list of homework questions by either Monday or Wednesday the week before, giving 8 or 10 days before the homework is due. There will also be a short quiz at the beginning of class on Fridays when homework is due, and it will be on the topics covered in the homework due that day (and possibly earlier material). The first quiz will be on Friday January 27. The lowest homework score and the lowest quiz score will be dropped.

Absence from exams

Missing a midterm is permitted only for the most compelling reasons. Except in extraordinary situations, you should obtain permission from the **professor** to miss an exam in advance; otherwise you will be awarded a 0. These situations include absences due to recognized University related activities, religious holidays, verifiable illness, and family/medical emergencies. If you are excused from taking a midterm, I will discuss with you what measures will be taken to determine your course grade. No make-up quizzes will be given (the lowest score will be dropped). Students missing the final exam either fail the course or get an incomplete, provided they satisfy the conditions for this.

Attendance

Students are expected to attend all lectures. Attendance may be checked and included in the grade line.

Expectations of written work

In a number of cases in the homework problems and the questions in the exams you will not get full credit if you simply write down the correct answer. To get full credit you will need to write an explanation of how you got your answer. Where explanations need to be given, these should be written out in sentences i.e. with verbs, capital letters at the beginning, periods at the end, etc. and not in an abbreviated form.

I encourage you to form study groups. However everything to be handed in must be written up in your own words. If two students hand in identical assignments, they will both receive no credit.

Prerequisites

Math 2xxx linear algebra such as Math 2243 or 2373 or 2573.

Computers and Calculators

Calculators will be allowed on some (probably all) quizzes and exams. Other electronic equipment may not be used or be available during quizzes and exams.

Incompletes

These will only be given in exceptional circumstances. A student must have satisfactorily completed all but a small portion of the work in the course, have a compelling reason for the incomplete, and must make prior arrangements with the **professor** for how the incomplete will be removed, well before the end of the quarter.

Academic Dishonesty

Academic dishonesty in any portion of the academic work for a course shall be grounds for awarding a grade of F or N for the entire course.

Date of this version of the schedule: 1/13/2017