Time and Location: M-W-F, 02:30 PM - 03:20 PM, Vincent Hall 6
Instructor: Arnaud Marsiglietti
Office: 434 Lind Hall
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Course webpage: http://www.ima.umn.edu/~arnaud.marsiglietti/teaching.html

Office Hours
Tuesday 10:30 AM - 12:30 PM, Friday 10:30 AM - 12:30 PM, or by appointment.

Textbook

Description of this Course
The main goal of this course is to help students develop a strong theoretical foundation in linear algebra. Linear algebra plays a profound role in both applied and theoretical mathematics, as well as in science and engineering, computer science, economics, numerical analysis, and many other disciplines. A proper grounding in linear algebra is an essential prerequisite for a successful career in science, engineering, and mathematics.

Prerequisites
Math 2243 or 2373 or 2573.

Homework
Homework will be assigned during lectures and also posted on the course webpage:
http://www.ima.umn.edu/~arnaud.marsiglietti/teaching.html
Quizzes (dates are tentative)
(4 quizzes)
Wednesday, September 23
Friday, October 16
Friday, November 20
Friday, December 11

Midterm Exam Date
(1 midterm exam split in two parts)
Monday, October 26
Wednesday, October 28

Take Home Exam Date
1 take home exam. It will tentatively occur at the end of November. The exact date will be announced in class and also posted on the course webpage: http://www.ima.umn.edu/~arnaud.marsiglietti/teaching.html
No late take home exam will be accepted, unless a SERIOUS reason explains the delay.

Final Exam Date
8:00-10:00 AM, Friday, December 18.
(see: http://onestop.umn.edu/calendars/final_exams/fall2015.html)

Absence from exams: Missing an exam is permitted ONLY for the most compelling reasons. Please notify me IN ADVANCE, if possible, if an exam is to be missed. Otherwise you will be given a 0.

Academic dishonesty: See the Student Conduct Code, a link to which is posted on the course website, for general information. Academic dishonesty will result in a report to the Office for Student Conduct and Academic Integrity, and penalties can include a grade of 0 on the task in question and/or a failing grade in the course.

Other policies: A link to other general policy statements – including statements about equal opportunity, disability accommodations – appears on the course website.

If you have a letter detailing accommodations, please notify me as soon as possible.
Grading (100 points)
- Attendance and Participation 15
- Quizzes 15
  (4 quizzes; lowest 1 quiz score will be dropped; 5 points per quiz)
- Take Home Exam 15
- Midterm Exam 25
- Final Exam 30

Lecture Plan
The course will be divided into 5 parts:

PART 1: Linear Algebraic System
(Follow chapter 1 of the textbook, section 1.1 to section 1.8)

Assigned Homework (to be presented on board):
1.1.1 a), 1.1.1 b);
1.2.1, 1.2.2, 1.2.7 a), 1.2.7 b);
1.3.22 a), 1.3.22 b);
1.5.1 a), 1.5.1 b), 1.5.24 a), 1.5.24 b), 1.5.30 a), 1.5.30 b);
1.6.2, 1.6.17 a), 1.6.17 b).

Additional Exercises (not required, but good practice):
1.1.1, 1.1.2;
1.2.1, 1.2.2, 1.2.3, 1.2.4, 1.2.6, 1.2.7, 1.2.9, 1.2.11, 1.2.15, 1.2.19, 1.2.21,
1.2.23, 1.2.32, 1.2.36, 1.2.37;
1.3.22;
1.5.1, 1.5.3, 1.5.6, 1.5.12, 1.5.13, 1.5.14, 1.5.15, 1.5.16, 1.5.19, 1.5.22, 1.5.24,
1.5.27, 1.5.30;
1.6.2, 1.6.6, 1.6.7, 1.6.9, 1.6.17, 1.6.20, 1.6.24, 1.6.29.

PART 2: Determinants
(Follow chapter 1 of the textbook, section 1.9)

Assigned Homework (to be presented on board):
1.9.1 b), 1.9.1 c), 1.9.2, 1.9.3.

Additional Exercises (not required, but good practice):
1.9.1, 1.9.3, 1.9.5, 1.9.6, 1.9.7, 1.9.8, 1.9.10, 1.9.22, 1.9.23.
PART 3: Eigenvalues
(Follow chapter 8 of the textbook, sections 8.1, 8.2, 8.3 and 8.4)

Assigned Homework (to be presented on board):
8.2.1 c), 8.2.1 d);
8.3.1 a), 8.3.1 b), 8.3.2 a), 8.3.2 b), 8.3.3 a), 8.3.3 b), 8.3.15 a), 8.3.15 b).

Additional Exercises (not required, but good practice):
8.2.1, 8.2.8, 8.2.9, 8.2.14, 8.2.16, 8.2.17, 8.2.21, 8.2.25, 8.2.32;
8.3.1, 8.3.2, 8.3.5, 8.3.15, 8.3.16.

PART 4: Inner Products, Norms and Distance
(Follow chapter 3 of the textbook, sections 3.1, 3.2 and 3.4)

Assigned Homework (to be presented on board):
3.1.2 a), 3.1.3, 3.1.19 a), 3.1.19 c);
3.2.1 a), 3.2.1 b), 3.2.12 a), 3.2.15, 3.2.16, 3.2.32;
3.4.1 a), 3.4.1 b), 3.4.1 c).

Additional Exercises (not required, but good practice):
3.1.1, 3.1.2, 3.1.3, 3.1.19, 3.1.20, 3.1.24, 3.1.27;
3.2.1, 3.2.4, 3.2.9, 3.2.12, 3.2.15, 3.2.16, 3.2.22, 3.2.24, 3.2.27, 3.2.32;
3.4.1, 3.4.3, 3.4.4.

PART 5: Orthogonality
(Follow chapter 5 of the textbook, sections 5.1, 5.2, 5.3 and 5.5)

Assigned Homework (to be presented on board):
5.1.1 a), 5.1.1 b), 5.1.21;
5.2.1 a), 5.2.1 b);
5.3.1 a), 5.3.1 c);
5.5.10.

Additional Exercises (not required, but good practice):
5.1.1, 5.1.5, 5.1.8, 5.1.11, 5.1.15, 5.1.21, 5.1.22, 5.1.26, 5.1.27;
5.2.1, 5.2.3, 5.2.9;
5.3.1, 5.3.2, 5.3.10, 5.3.11, 5.3.14, 5.3.25;
5.5.1, 5.5.3, 5.5.4, 5.5.5, 5.5.10, 5.5.12, 5.5.13, 5.5.30, 5.5.31.