Math 211 :: Syllabus :: Fall 2015
This is the syllabus for Math 211 Linear Algebra. See the links to the right for updated information. Here you'll find information on prerequisites, grading policy, homework, study resources and a tentative course calendar. See the box in the upper right for more links and information for the course.

Textbook
The (required) textbook we will use for this course is *Contemporary Linear Algebra* by Anton & Busby. It is available at the University Bookstore and online.

Classroom
The class sessions will be active. On most days you will be asked to DO something other than listen to me lecture.

Office Hours
I am often in my office JXJ 2226, just stop by and see if I am available, or email me to make an appointment. My official office hours are:

- Monday: 10am - 11am
- Thursday: 12 - 2pm
- Friday: 10am - 11am

Other Resources
There is a Student Solutions Manual for this textbook. The link on the right Linear Algebra Resources contains links to mostly free sites & documents that will help you get off on the right foot. Both free and paid tutoring is available, in the tutoring lab in NSF 3810.

Prerequisites
You need a B- or better in MA 161 or written permission from me, the instructor.

Quizzes
Group quizzes will be given on occasion. Groups may change each time.

Calculators
Calculators are allowed on all homework. The use of calculators on quizzes and exams will be determined on a case by case basis. Unless otherwise notified, you are not allowed to have any information saved in your calculators during quizzes and exams.

Laptops
Please bring your laptop to every class! We will use the software package MATLAB in this class. Go to the HelpDesk to have MATLAB installed on your laptops ASAP! In order to promote a positive classroom experience, do not use your laptop in class unless instructed to do so.

Grading
- Homework 25%
- Group Quizzes 5%
- Exams 45% (3 @ 15% each)
- Final 25%

Exams
- Exam 1 - September 18
- Exam 2 - October 16
- Exam 3 - November 18
- Final - Tuesday, December 10 :: 12 pm - 1:50 pm

Make sure that you will be able to attend the exams at the given dates and times. Exceptions can only be accepted in case of time conflicts with other courses, or serious illness with a physician's certification. [Final Exam Schedule]

Outcomes & Assessment
Upon successful completion of this course students will be able to:
Demonstrate fluency with the language of linear algebra.
Solve a system linear equations.
Find and use the inverse of a matrix to solve problems.
Recognize and analyze linear transformations.
Recognize and solve an eigenvalue problem.

Evaluation of these learning outcomes will be done through a mix of assignments, class exercises, projects, research papers, group work, written & oral quizzes and tests.

Tentative Schedule

CHAPTER 1 - VECTORS
day 1: intro, MATLAB intro, vectors
day 2: dot product & orthogonality
day 3: vector equations of lines & planes
MATLAB Project: tutorial, dot product, vector eqs, sound

CHAPTER 2 - LINEAR SYSTEMS
day 4: Labor Day vacation
day 5: vector equations of lines and planes
day 6: more vector equations & intro to systems
MATLAB Project: traffic, gps, poly fitting
day 7: solving systems of equations
day 8: review
day 9: exam 1

CHAPTER 3 - MATRICES AND ALGEBRA
day 10: matrix operations
day 11: inverses
day 12: elementary matrices & finding inverses
MATLAB Project: inverses & image algebra
day 13: subspaces
day 14: geometry
day 15: special forms
MATLAB Project: image subspaces

CHAPTER 4 - DETERMINANTS
day 16: determinants and properties
day 17: review
day 18: exam 2
day 19: review
day 20: eigenvalues
day 21: no class
MATLAB Project: eigenvalues

CHAPTER 5 - MODELS & APPLICATIONS
day 22: eigenvalues
day 23: dynamical systems, markov chains
day 24: active day
MATLAB Project: fractals, eigenplay

CHAPTER 6 LINEAR TRANSFORMATIONS
day 25: power method, internet search
day 26: transformations
day 27: geometry
MATLAB Project: point cloud transformations I
day 28: kernel and range
day 29: composition
day 30: computer graphics

MATLAB Project: point cloud transformations II

CHAPTER 7 - DIMENSION AND STRUCTURE

day 31: project day
day 32: basis
day 33: properties
day 34: review

**day 35: exam 3**
day 36: review
day 37: fundamental spaces
day 38: projection & best approximations
day 39: least squares

MATLAB Project: climate modeling

CHAPTER 8 and REVIEW

day 40: least squares
day 41: THANKSGIVING
day 42: THANKSGIVING
day 43: the svd and data
day 44: review
day 45: review

**University Policies**

**Academic Honesty:** Cheating is not only unethical and pathetic, but is a violation of the Northern Michigan University **Student Code and University Policy** and grounds for your dismissal from the University.

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**Americans with Disabilities Act Statement:** The University seeks to provide equal access to its programs, services and activities for people with disabilities. If you have a need for disability-related accommodations or services, please inform the Coordinator of **Disability Services** in the Dean of Students Office at 2001 C. B. Hedgcock Building (227-1700). at 906-227-1700 as soon as possible. Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and University guidelines.

**The Registrar:** Withdrawing from any course or any matters relating to registration are the responsibility of the student. For more information regarding this topic, check out the **Registrars Website.**