MATH 307, Section 921 (2014 Summer Term)
Applied Linear Algebra

Lectures: 10:30AM-12:30PM Monday and Wednesday & 12:30-2:00PM Tuesday and Thursday in LSK 201
Instructor: Iain Moyles
Email: imoyles@math.ubc.ca
Office Hours : Monday 1:00-2:00pm and Thursday 2:00-3:00pm in LSK 303C

Text There is no official text for this course. There is an online set of notes available for this class which will be on the course website. Lecture notes will also be available online shortly after the material has been covered in class. Some optional texts for this course are:

Linear Algebra and its Applications by Gilbert Strang.
Elementary Linear Algebra with Applications by Howard A. Anton and Chris Rorres.

Webpage: http://www.math.ubc.ca/~imoyles/courses/math307
Piazza: https://piazza.com/ubc.ca/summer2014/math307

Course Outline: This course focuses on applications of linear algebra. Some examples include

- Interpolation

- Finite difference approximations

- Formula matrix of a chemical system

- Least Squares

- Fourier series

- Graphs and Networks

- FFT

- JPEG compression

- Power method

- Recursion relations

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- The Anderson tight binding model

- Markov chains

- Google PageRank

- Principal co-ordinate analysis

We will study a selection of this list during the term. Each application will be preceded by discussion of the relevant concepts from Linear Algebra. These will be partly review from your previous linear algebra course and partly new material. You will also learn how to do Linear Algebra on a computer using MATLAB or Octave.

Grading Scheme:
50% Final Exam + 30% Midterm + 10% Assignments + 10% Communication

IMPORTANT: This is a 3-credit course with a maximum grade of 100. The instructor reserves the right to revise or round off grades if circumstances warrant. Scaling of the raw grade may be required.

Midterms & Final Exam: There will be a final cumulative exam that will be held in June. Students are advised not to make travel plans during the exam time.
There will be one 50 minute written midterm held in class. The midterm date is

- **Thursday, May 29, 2014**

Calculators, books, and notes are not allowed in any exams

If a student misses a midterm, that student shall provide a formal documented excuse such as a doctor's note within 72 hours or a mark of zero(0) will be entered for that midterm. If you are to miss a midterm due to religious observance, two weeks written notice is required by the student. See the UBC full policy on this for more information. There will be **NO** make-up midterms. Any tests missed with legitimate reasons will have their final exam re-weighted.

Assignments: There will be weekly homework assignments which have both a written and computational component. Homework will be assigned Thursday and due the following Thursday by the posted time. Late assignments will not be accepted.

Communication: One of the most important aspects of applied mathematics is the ability to work as a team and communicate work to audiences with a broad background. As an exercise in communication, you will submit and rewview solutions to previous Math 307 exams. Writing a solution means that you are primarily responsible for the solution design and content. Reviewing a solution means that you provide feedback to solutions that your classmates have written, improving their structure, flow, or mathematical concept. For more information see the piazza forum.

Extra help: Drop-in Tutorials: There is a drop-in tutorial centre located on the third floor of LSK.
The AMS offers tutoring services http://tutoring.ams.ubc.ca/.

Cheating: It is the student's obligation to inform himself or herself of the applicable standards for academic honesty. Students must be aware that standards at the University of British Columbia may be different from those in secondary schools or at other institutions. If a student is in any doubt as to the standard of academic honesty in a particular course or assignment, then the student must consult with the instructor as soon as possible, and in no case should a student submit an assignment if the student is not clear on the relevant standard of academic honesty.