Math 152, Spring 2017

Course Web Page: www.math.ubc.ca/~wetton/

Text: There is no required texbook for this course. Instead, we will be following a set of lecture notes. They are available for downloading on the web page above. In the course, we will cover Chapters 1-6, except for the "additional topics" sections. An *optional* additional commercial textbook, "Introduction to Linear Algebra for Science and Engineering" by Norman and Wolczuk covers much of the material in the course.

Marks: 50% final, 2 midterms worth 15% each, labs worth 10%, homework worth 10%. **Note:** Midterms will be common for MWF sections with a different common test for TTh sections. Midterm marks may be scaled differently between these two groups to the average on the common final exam.

Midterm Dates: Wednesday/Thursday February 8/9, Thursday/Friday March 16/17

Assignments: There will be weekly online WebWork assignments, posted on Fridays and due the following Mondays (in 10 days) at midnight. There will be 11 assignments. The lowest assignment mark will be dropped from the average.

Labs: You are responsible for completing six one hour computer labs using the software, MATLAB. They will be held once every two weeks. There is no lab during the first week of classes. Lab material will be tested in tests and in the final exam.

Calculators: **NO** calculators are permitted on the final exam or tests.

Notes: **NO** notes are permitted on the final exam or tests.

Final Exam: There is a common exam for all sections of Math 152.

Course Outline

week #1, January 2-6: (Monday holiday) vectors and coordinate representation; vector length. *Notes sections: 2.1, 2.2, 2.3*

week #2, January 9-13: dot product, projection; determinants; cross product; lines and planes in 2D and 3D and planes in 3D. *2.3, 2.4, 2.5*

week #3, January 16-20: lines and planes (cont.); geometry of solutions of linear systems; linear dependence and independence *2.5, 2.6*

week #4, January 23-27: solving linear systems; echelon form and rank; homogeneous equations. *3.1, 3.2, 3.3*

week #5, January 30-February 3: homogeneous systems (cont.); geometric applications; resistor networks. *3.3, 3.4, 3.5*

week #6, February 6-10: Midterm #1; matrix multiplication; linear transformations. *4.1, 4.2*

week #7, February 13-17: (Monday holiday) rotations, projections and reflections in 2D; matrix representation and composition of linear transformations; random walks; *4.2, 4.3*

February 20-24 Reading Week

week #8, February 27-March 3: random walks (cont.) transpose; matrix inverse; determinants. *4.3, 4.4, 4.5, 4.6*

week #9, March 6-10: determinants (cont.); complex numbers; complex linear systems; complex exponential; polar representation *4.6, 5.1, 5.2, 5.3, 5.4*

week #10, March 13-17: Midterm #2; eigenvalues and eigenvectors. *6.1*

week #11, March 20-24: eigenvalues and eigenvectors (cont.); powers of a matrix; application of eigen-analysis to random walks. *6.1, 6.2*

week #12, March 27-31: vector differential equations; application of vector DEs to electrical networks; *6.3, 6.4*

week #13, April 3-7: (no Friday class) complete course material; review