Western University Course Outline
Applied Mathematics 2811b, Winter 2016
Linear Algebra II

Instructor: Dr. Greg Reid   **Office:** MC 281
email: reid@uwo.ca   **Tel:** 679-2111 Ext. 88793
lectures: KB-K203 M W F 12:30pm – 1:30pm

Web: (Sakai): owl.uwo.ca (check it at least 4.44 times a week)

Text: *Applied Linear Algebra* by Peter J. Olver and Chehrzad Shakiban
Prentice Hall, 1st ed., 2005, ISBN-10: 0131473824
Authors' Web Page for Text: http://www.math.umn.edu/~olver/ala.htm
It's available in the Book Store).

Background & Prerequisites:
Prerequisites: AM 1413 or Calculus 1301A/B or 1501A/B and a minimum mark of 60% in Mathematics 1600A/B or the former Linear Algebra 1600A/B, or Applied Mathematics 1411A/B.

This course is a follow-up to a standard first university level course in linear algebra. Topics in such a first course include: vectors, matrices and matrix algebra and applications, solution of linear equations in a general setting, determinants, vector spaces, orthogonality, eigenvectors and eigenvalues.

Contents of Course: Vector space examples, inner products, orthogonal sets including trigonometric functions, wavelets, projections, least squares, normal equations, Fourier approximations, eigenvalue problems, diagonalization, defective matrices. Coupled difference and differential equations; applications. Singular Value Decomposition, image approximations. Linear Transformations, Graphics. Applications to the sciences and other areas will be an integral part of the course.

Maple (and occasionally Matlab) will be used throughout the course. Prior knowledge of programming is not required, although the student should have had some experience with using a computer package (e.g. Maple, Matlab or Mathematica). Students are expected to develop their ability to write solutions and this will be a component of assessment (i.e. English description, rather than just formulae).

Evaluation:
Some marks will be given for *style*: with particular emphasis on verbal expression, brevity and clarity.
bonus points: occasionally challenge problems will be posed.
Approximately 4 hand-in assignments and 4 quiz(25%),
Bonus points (to a max of 3%),
Midterm (25% , date to be confirmed.),
Final Exam(50%).

Graded assignments and quizzes will all be equally weighted. There will be no make-ups on missed quizzes or assignments. However, you will be able to drop your lowest two scores (e.g. if these were an assignment, and a quiz score then you would drop those two). Please let me know of legitimate reasons for missing quiz/assignments with appropriate documentation at the time they occur. In the case of 3 or more appropriately documented missed items the student can ask that the assessment for the final be increased to 70% and the midterm to 30%. Some Maple related questions can occur on quiz/tests/assigns. In the case of a missed midterm with appropriate documentation, the assessment will be 30% assignment and quiz and 70% for the final. Bonus problems in hand-in assignments will be given (to a max of 3% and kept as a separate assessment item top of your total other assessment).

The fine print – Addendum to all Applied Mathematics Course Outlines

The UWO Senate Academic Handbook has specified that the following points should be added to all course outlines:

A. Prerequisites: AM 1413 or Calculus 1301A/B or 1501A/B and a minimum mark of 60% in Mathematics 1600A/B or the former Linear Algebra 1600A/B, or Applied Mathematics 1411A/B.

B. Medical/Compassionate Excuses: Students missing work for valid medical or other reasons are governed by the regulations `https://studentservices.uwo.ca/secure/index.cfm`

C. Accessibility Statement: Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation. If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to your faculty's Dean's Office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from your faculty's Dean's Office immediately.

D. Calculators: No calculators on tests.

E. Academic Offences: Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: // `http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf`

F. Plagiarism on Term Paper: All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (`http://www.turnitin.com`).

G. Support Services: Support is available from the Registrar: `http://www.registrar.uwo.ca`, via the university students council (`http://westernusc.ca/services/`) and at Student Development Services (`http://www.sdc.uwo.ca/`).

H. Mental or Emotional Health: Students who are in emotional/mental distress should refer to Mental Health@Western `http://www.uwo.ca/uwocom/mentalhealth/` for a complete list of options about how to obtain help.