GRANDE PRAIRIE REGIONAL COLLEGE
MATH 1020
WINTER 2010

Title: Engineering Linear Algebra (3-1-0) 3 credits

Transfer: UA*, UC*, UL*, AU*, AF*, CU, KUC, other (from GPRC Calendar, * important transfer information, consult the Alberta Transfer Guide)

Prerequisite: MA1000

Schedule:

Lecture A3	T Th	10:00-11:30	J202
Seminar AS1	M	12:00-1:00	J226
Seminar AS2	F	10:00-11:00	

Instructor: Dallas Sawtell
Office C204
Phone 539-2989
e-mail dsawtell@gprc.ab.ca

Textbooks: Anton-Rorres, Elementary Linear Algebra, Applications Version

Grading:

Worksheets	13%
Quizzes	12%
Midterm	25%
Final Exam	50%

Seminars/worksheets: The seminars are one hour long. A worksheet will be given out that must be handed in by the end of the seminar for marking. Seminars start Friday, Jan. 8.

Quizzes: Quizzes will be held every other Tuesday starting Jan 12. Quizzes can not be made up if missed.

Midterm: If the midterm is missed with a good reason, the weight will be put on the final (ie. the final will be worth 75%). A doctors note will be required. The midterm will be on Tues., Feb 23.

Finals: Finals are held from April 17 to April 29 inclusive (including Saturdays and evenings). Writing finals early is not permitted. A doctor's note is required if you have to miss a final.

Calculators: Use of calculators is not permitted on the quizzes or exams.

Plagarism: See Calendar

Grading Scheme:

A+	4.0	95-100%
A	4.0	90-94%
A-	3.7	85-89%
B+	3.3	80-84%
B	3.0	75-79%
B-	2.7	70-74%
C+	2.3	66-69%
C	2.0	62-65%
C-	1.7	58-61%
D+	1.3	55-57%
D	1.0	50-54%
F	0.0	0-49%

Note: A grade of D or D+ will NOT meet prerequisite requirements for other math courses and may not be accepted by other universities.

Content:

Ch 1- Systems of linear equations and matrices-Introduction to Systems of Linear Equations, Gaussian Elimination, Flows and Electrical Circuits (11.2), Matrices and Matrix Operations, Inverses; Rules of Matrix Arithmetic, Cryptography, Invertibility, Diagonal, Triangular, Symmetric Matrices

Ch 2- Determinants-The Determinant function, Evaluating Determinants by Row Reduction, Properties of the Determinant Function, cofactor Expansion; Cramer's Rule

Ch3- Vectors in 2 and 3-Space-Introduction to Vectors, Norm of a Vector; Vector Arithmetic, Dot Product; Projections, Cross Product, Lines and Planes

Ch 4- Euclidean Vector Spaces-Euclidean n-Space

Ch 5- General Vector Spaces-Real Vector Spaces, Subspaces, Linear Independence, Basis and dimension, Row Space, column Space, Nullspace, Rank and Nullity

Ch 6- Inner Product Spaces
-Orthonormal Bases; Gram-Schmidt Process

Ch7- Eigenvalues, Eigenvectors-Eigenvalues and Eigenvectors, Diagonalization, Orthogonal Diagonalization, Gram-Schmidt

Ch 10- Complex Numbers-Complex numbers, Division/Multiplication of Complex Numbers, Polar Form of Complex Numbers

9.1- Systems of Differential Equations-2nd order and higher homogeneous DEs with constant coefficients, including complex solutions